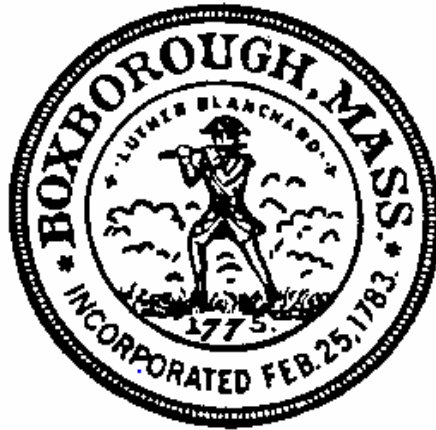


# Town of Boxborough



## OPEN SPACE AND RECREATION PLAN

May 10, 2002

**A REPORT BY THE BOXBOROUGH PLANNING BOARD,  
THE CONSERVATION COMMISSION AND  
THE RECREATION COMMISSION**

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# TOWN OF BOXBOROUGH OPEN SPACE AND RECREATION PLAN

May 10, 2002

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## SECTION 1 – PLAN SUMMARY

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The Open Space and Recreation Plan is a comprehensive planning document that assesses the adequacy of existing open lands and recreation facilities, determines where and what types of land and facilities are needed, and establishes an action plan for land acquisition, land management, and recreation programming to guide town agencies for the next five years. The overall goal of the Open Space and Recreation Plan is to retain the character of Boxborough by establishing a diverse system of interconnected open space areas and to provide quality recreation programs for all residents of Boxborough to enjoy, keeping pace with a rapidly growing community. The open space plan recognizes that Boxborough is a desirable community partly because of its scenic, natural, and historic resources. It is these characteristics that the Open Space and Recreation Plan strives to protect. The first part of the plan contains information on the community setting including: regional context, historic data, demographics, and development patterns. The next section contains details on the environmental characteristics of the town. An inventory of all conservation and town owned land is provided. General community goals and specific goals and objectives are also established. An analysis of need is derived from a town wide survey questionnaire, Master Plan community workshops, demographic data, and state and Federal recreation standards. Finally, the plan is implemented through the five-year action plan that identifies actions the town will take to achieve its goals.

A population increase of 2,000 people at build-out would have significant impact on the landscape. It means that an additional 2,200 acres, one-third of all of the land in Boxborough (approx. 6,650 acres), would be developed, leaving only 1,300 acres of open land. Clearly, if the citizens of Boxborough cherish the open, rural quality of their town, they have choices to make. How much open space do they want to purchase to maintain the feeling of openness? What are the costs of such purchases? Is acquisition the only option?

There are a number of ways that open land can be protected. The first is through education. Although designating land under Chapter 61, 61A, or 61B may protect land on a temporary basis, such designations are not permanent. Owners of open land must be informed about the tax advantages of Conservation Restrictions and Agricultural Preservation Restrictions in order to voluntarily preserve open land. Education is the least costly tool for open space protection. Although the town is forfeiting the taxes that would otherwise be paid on this land, it is gaining open land at a substantially lower cost than if it purchased the land.

A variation on the theme of restriction is partial development. Some owners might want to sell open land. In this case, they may be willing to subdivide a few lots for development while preserving the remainder of the parcel by deeding it to the Conservation Commission or a Land Trust.

Town purchase of land is costly. If all of the chapter lands were purchased by the town, based on their assessed values as open land, the cost would be almost \$5.3 million; market value might be higher. Clearly, this is not economically feasible. Regardless of the reason

for purchase of the land, the cost will be high and the town will have to be selective in its choice of parcels.

Finally, the third option for keeping land open is through regulations. Rather than increasing the size of lots, the town could allow houses to be built on smaller lots in order to preserve contiguous common open land through what is called Open Space Residential Design. It is a form of clustering, but it is sensitive to the natural features of parcels and to those that surround them. Such a development would not increase density, but would permit houses to be put on the land in a different way, a way that is compatible with the environment. For smaller developments, the Planning Board might waive strict adherence to infrastructure standards in order to encourage a developer to build fewer units, thus permitting the preservation of open space. One of the advantages of allowing housing to be closer together is that it encourages the creation of neighborhoods that, in turn, fosters the sense of community that Boxborough townspeople cherish.

Protecting the natural resources of Boxborough goes hand in hand with the retention of town character and the "feeling" of openness. The loss of resources is directly proportionate to the increase in developed land. Land consumption has been dramatic in the I-495 area in the past ten years and high-tech companies have located in the region, grown, and expanded. In Boxborough the 46% increase in population has come primarily from new single-family homes on previously undeveloped land. This development has put pressure on the natural resources and will continue to do so as more open land is converted.

The town realizes that it does not have the financial resources to purchase all of the privately owned undeveloped land. The purpose of this plan is to identify the most important parcels of land to preserve; and to use land acquisition in concert with other land preservation techniques to meet the town's open space goals. The primary open space goals for the next five years are to use traditional and innovative techniques for protecting additional open space, keeping pace with development as follows:

- Open Space in all areas of Town
- Open Space within walking distance of all residents
- Provide trails and corridors to connect parcels of conservation land
- Preserve a large grassland area
- Preserve upland around Wolf Swamp
- Acquire and protect a large upland area.

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## **SECTION 2 - INTRODUCTION**

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This plan updates The Conservation and Recreation Plan that was filed with the Division of Conservation Services in 1998. Since 1998, the town has made considerable strides in protecting additional open space. However, additional efforts are needed to achieve the goal of preserving contiguous upland areas within walking distance of all residents.



Since the last plan, 10 parcels totaling over 300 acres have been acquired for conservation and general municipal purposes; the Patch Hill subdivision land (2.41 acres); the Culkins land (22.07 acres); the High Pastures land (24.14 acres); the Lydia Lee Delano land (6.32); and the Delano land (21.97) were all donated to the town for conservation purposes. The Flagg Hill (Windemere) land (36 acres designated as conservation, 36 acres designated as general municipal); and the Hetz land (27 acres for municipal purposes) were purchased by the town. The town appropriated \$1.5 million for Flagg Hill, and \$555,000 for Hetz. The town also acquired the Guilford land (6.68 acres) for conservation purposes. The Guilford land was purchased for \$15,000 (\$5,000 from the Conservation Trust Fund, \$5,000 from the BCT and \$5,000 from a DEM Greenways and Trails grant). An agricultural restriction was placed on approximately 47 acres of land on the Sheehan farm. Over 320 acres of land were protected through private conservation restrictions since the last Open Space and Recreation Plan. Restrictions were placed on the Culkins land; Cisco Systems Inc. Phases I and II; Bren Schreiber land; and Colonial Ridge land.

The Boxborough Conservation Trust (BCT), a private, non-profit land trust was formed since the last Open Space Plan. The BCT has supported the Conservation Commission in land management, education, and acquisition projects. The BCT acquired the Sargent Road (Grady) land (20 acres); adjacent to the Half Moon Meadow conservation land. The BCT has committed a major gift to the town to facilitate the purchase of the Patch Hill Conservation Area, the two land acquisition articles to be voted on at the Special Town Meeting within the Annual Town Meeting on May 13, 2002. The Patch Hill Conservation Area project has also been awarded a total of \$500,000 in Self-Help funds.

In addition to land acquisition, the Conservation Commission has participated in several land conservation/management activities. The Conservation Commission of Boxborough and Stow completed a land management plan for Flagg Hill. The Planning Board and the Conservation Commission are working on updating the "Boxborough Conservation Land and Trail Guide." The guide describes all the town-owned conservation land and shows the location of trails. A number of Boy Scout projects were performed under the supervision of the Conservation Commission. A new trail was cut in Wolf Swamp; a marker was erected at the Guggins Brook sawmill site; and a new sign was erected at Flerra Meadows. The town has also implemented a Town Geographical Information System (GIS). The GIS will be a key tool for mapping open space in town. GIS will also be used for things like maps of playing fields, trail maps, restricted land; and for comparing existing and proposed land uses. The GIS will also be used for presentations to Town Meeting for land acquisition and zoning articles. The town proposed the adoption of the Community Preservation Act; however, town meeting rejected the proposal. The Planning Board adopted the Boxborough Master Plan dated January 29, 2002 prepared by Beals and Thomas Inc. The Master Plan has been submitted to the Regional Planning Agency for equivalent plan status review under Executive Order 418.

A new playground was erected by volunteers within the 5 acres of active recreation land on Flerra Meadows. The existing playground at Blanchard Memorial School was renovated as part of the school renovation/expansion project. Two soccer fields and a baseball

diamond, “Liberty Fields” are under construction on the Hetz municipal land. A ten-acre multi-purpose playing field is under construction on the Cisco Site 2 land. This land will be donated to the town when the field is completed.

## STATEMENT OF PROCESS AND AGENCY PARTICIPATION

The Conservation and Recreation Plan is a joint planning project conducted by the Planning Board, the Conservation Commission and the Recreation Committee. The Conservation and Recreation Plan is an integral part of a town-wide comprehensive balanced growth and land management plan. This plan relies on public participation techniques used during the development of the Master Plan since the preservation of open space and the retention of town character were key components of the Master Plan. As part of the Master Plan process, there were three community workshops. The Master Plan process was guided by the Master Plan steering committee comprised of representatives from all Boards and Commissions, the Boxborough Business Association, and citizens at large. A draft of this Conservation and Recreation Plan was distributed to the Board of Selectmen, the Planning Board, the Conservation Commission, the Recreation Commission, the Board of Appeals, the Board of Health, and MAPC, the regional planning agency. This final draft incorporates the suggestions and recommendations submitted by these agencies.

The Conservation and Recreation Plan is based on the premise that unchecked or uncontrolled development threatens the community fabric that attracted people to Boxborough. The plan strives to strike a balance between development and preservation. Unbridled growth can result in degradation of public drinking water sources, traffic congestion, inefficient delivery of government services, destruction of wildlife habitat, destruction of unique scenic and historic resources, human stress, shoddy construction, and carpetbagger development. There are also economic costs associated with growth. According to 2000 tax assessments, an average single family dwelling requires more in service costs than it pays in taxes.

Preservation of open space has natural, social, and psychological benefits. Open land provides visual relief from the developed landscape. Vegetation helps filter out pollutants from air, rain water, and runoff. Vegetation also mitigates temperature extremes. Trees especially help reduce air pollution through the process of transpiration. Open space provides habitat for animal and bird species, and can be used for active or passive recreation, including baseball, soccer, walking, hiking, mountain biking, cross-country skiing, swimming, and nature study. Open space provides respite from people.

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## SECTION 3 - COMMUNITY SETTING

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### REGIONAL CONTEXT

Boxborough is located in Middlesex County, 25 miles from Boston. (Map 1) The town contains 10.4 square miles and is abutted by Littleton to the north, Acton to the east, Stow to the south, and Harvard to the west. Interstate 495 runs through the western section of town and Route 2 crosses the northeast corner of Boxborough. Route 111 bisects the town, connecting Boxborough to Harvard to the west and Acton to the east. Thus, existing transportation networks make Boxborough accessible to major east-west and north-south routes. Boxborough is within commuting distance of Boston, Lowell, Lawrence, Leominster, Fitchburg, Worcester, and Framingham in Massachusetts, and Nashua, New Hampshire. Because of its proximity to population and employment centers, its rural atmosphere, and the reputation of its schools, Boxborough continues to be an attractive place to live and to conduct business.

According to the 1990 Census, a majority of workers living in Boxborough, travel to Acton, Boxborough, Concord, Boston, Littleton, Lexington and Cambridge for work. Conversely, companies located in the town of Boxborough employ persons from Acton, Boxborough, Leominster, Lowell, Harvard, Maynard, Nashua and Fitchburg.

Several town resources are shared with the neighboring town of Acton. Both towns send their students to the Acton-Boxborough Regional School system for grades 7-12. In addition, the two towns share some of the recreation activities. One of Acton's public drinking water wells is located near the Boxborough town line. The town of Littleton has a public drinking water supply located near Boxborough's northerly town boundary. Both Acton and Littleton have portions of the Zone 2's of their public wells that extend into Boxborough. All Boxborough brooks drain via intermediaries into the Merrimack River; therefore, Boxborough's watershed address is the Merrimack River Basin. Boxborough is within the Assabet River watershed and the Stoney Brook watershed.

The Flagg Hill conservation land preserves 286 acres of land in Boxborough and Stow. The Conservation Commissions of Boxborough and Stow jointly maintain the Flagg Hill conservation area. The Flagg Hill land has a network of trails connecting Stow and Boxborough. The Sudbury Valley Trustees have prepared a Flagg Hill information pamphlet describing the land and its unique features.

There are several other opportunities for creating intertown trails and contiguous open space. There are two parcels of conservation land in Acton on the Boxborough town line. One parcel could be connected to the Guggins Brook wetland parcel. The town is currently negotiating the acquisition of this land with the Reed Farm Developers. There is also the possibility of linking conservation land along Fort Pond Brook. The Delaney Project, located in Harvard and Stow, abuts Boxborough along its southern boundary. Access to the Delaney project from Boxborough could be provided. The town of Harvard has conservation land along the western town boundary of Boxborough. There is potential of linking this conservation land with the proposed open space in the Cisco development expansion project located in Beaver Valley. The Division of Fisheries and Wildlife has recently acquired a parcel of land that straddles the Boxborough and Littleton town line.

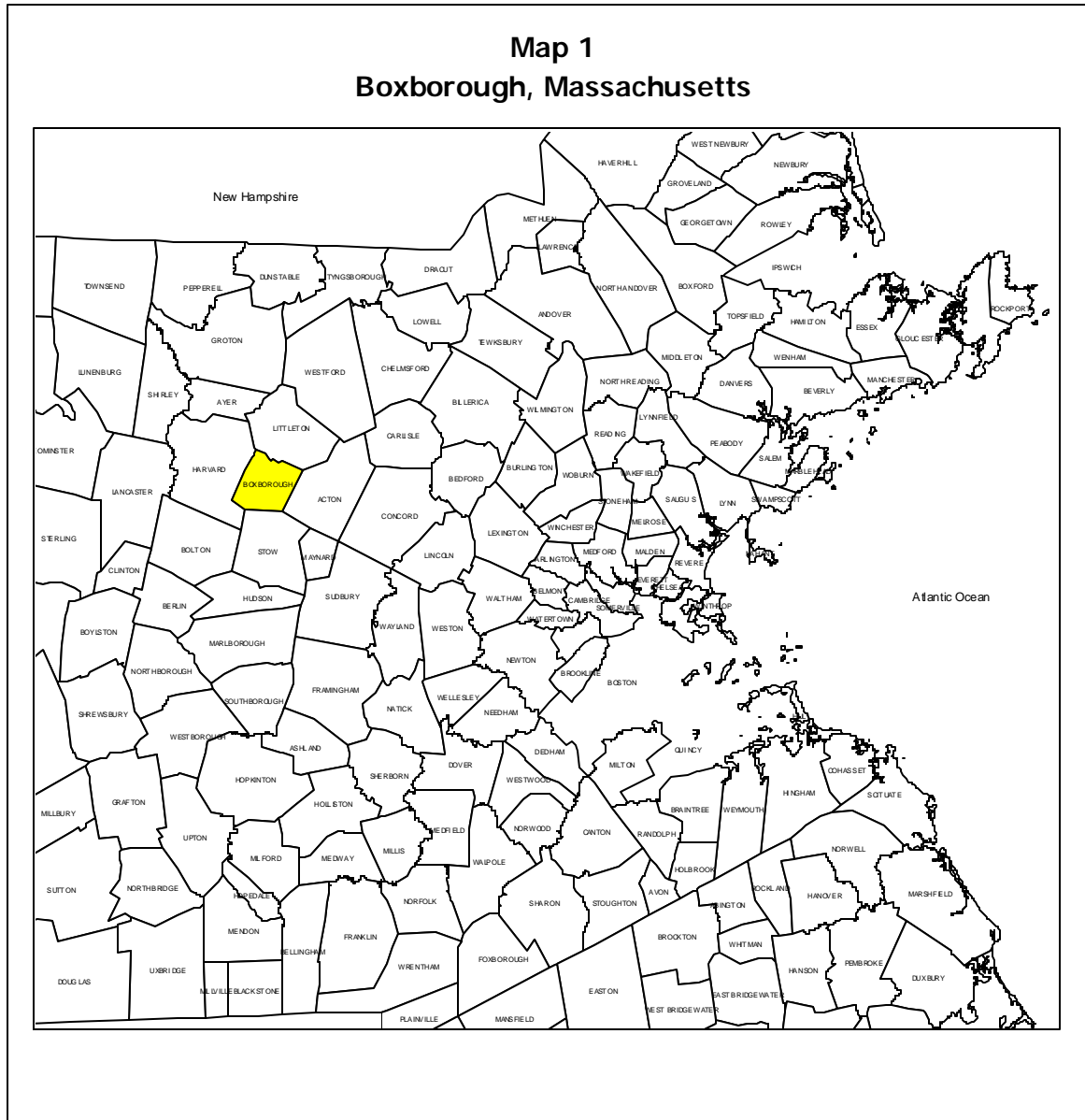
Boxborough is within the Metropolitan Area Planning Council (MAPC); and is a member of the Minuteman Area Group for Interlocal Coordination (MAGIC) subgroup. MAGIC is one of the eight MAPC subregions located on the western edge of the Boston Metropolitan Area. MAGIC meets monthly to discuss issues of common interest. MAGIC provides a forum for discussing regional open space issues and opportunities. The Open Space and Recreation Plan is consistent with the MetroGreen Plan prepared by MAPC, which advocates preserving: “a network of open space including critical environmental areas, unique landscape features, rights-of-way with scenic or recreational potential and areas required to fill regional open space and recreational needs.” The Boxborough plan highlights the preservation of water resources, agricultural lands, wildlife habitat, and scenic and historic resources. The plan identifies features worthy of protection and proposes a variety of techniques including land acquisition, conservation restrictions, land gifts and land use controls to preserve and protect open space.

## HISTORY OF THE COMMUNITY

Boxborough was incorporated in 1783. The town was formed by taking portions from Harvard, Littleton, and Stow, when residents living on the outskirts of these communities wanted a more convenient place of worship.

The historic center of Boxborough was located at the top of Hill Road at its intersection with Middle Road. It was here that the first meeting house was erected. In 1835, a new Town Hall was constructed near the southern end of the common on Hill Road. This Town Hall was sold at an auction and later torn down. Early reports suggest that a number of small home businesses were operating in the historic center. Existing reminders of the former town center are the old North Cemetery, a small common area, and several historic houses. In 1901, the town center shifted from the intersection of Hill and Middle Road when a new Town Hall building was constructed at its current site on Middle Road, across from the UCC Church. The Historical Commission is in the process of hiring a consultant to prepare a town-wide historic inventory. The GIS department has mapped all houses 50 years old and older. Map 2 locates these houses. The list of historic houses is provided in Appendix A.

# MAP 1 Town of Boxborough



## POPULATIONS CHARACTERISTICS

Most of the following demographic data are based on the 2000 US Census. However, where the 2000 census data is not available, 1990 census data was used and has been noted. Population projections were based on extrapolated 1990 census figures. More recently, the Massachusetts Executive Office of Environmental Affairs performed build-out analyses for all communities in the State. Although the analysis for Boxborough uses current population projection techniques, the numbers are still projections, not data.

Boxborough contains 10.39 square miles of land and is a small community compared to the surrounding towns - about half the size of Acton, Stow, and Littleton, and even smaller when compared to Harvard. In terms of population density, however, Boxborough is denser than Stow and significantly less dense than Acton.

*Table 1: Comparison of Density for Boxborough and Surrounding Towns*

<b>Town</b>	<b>Area in square miles</b>	<b>2000 Population</b>	<b>Density (pop./sq.mi.)</b>
Massachusetts	8257	6,349,097	769
Acton	20.29	20,331	1,002
<b>Boxborough</b>	<b>10.39</b>	<b>4,868</b>	<b>469</b>
Harvard	26.97	5,981	222
Littleton	17.55	8,184	466
Stow	18.09	5,902	326

Source: Mass DHCD Community Profiles and 2000 U.S. Census

Boxborough's population grew rapidly (110%) between 1970 and 1980 from 1,468 to 3,126. There was another growth spurt in the past decade from 3,343 in 1990 to an estimated 4,868 in 2000 (46%). This is a much faster rate than surrounding communities.

*Table 2: Comparison of Population Changes in Boxborough and Surrounding Towns*

<b>Town</b>	<b>1930</b>	<b>1940</b>	<b>1950</b>	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>1970-2000</b>
Acton	2,483	2,701	3,510	7,238	14,770	17,544	17,872	20,331	37.7%
<b>Boxborough</b>	<b>312</b>	<b>376</b>	<b>439</b>	<b>744</b>	<b>1,488</b>	<b>3,126</b>	<b>3,343</b>	<b>4,868</b>	<b>227.0%</b>
Harvard	987	1,790	3,983	2,563	13,426	12,170	12,329	5,981	*
Littleton	1,447	1,651	2,349	5,109	6,380	6,970	7,051	8,184	28.3%
Stow	1,142	1,243	1,700	2,573	3,984	5,121	5,328	5,902	48.1%

\*Harvard's population included Fort Devens that closed in the early 1990s

Source: U.S.Census

## MAP 2 Historic Sites and Homesites

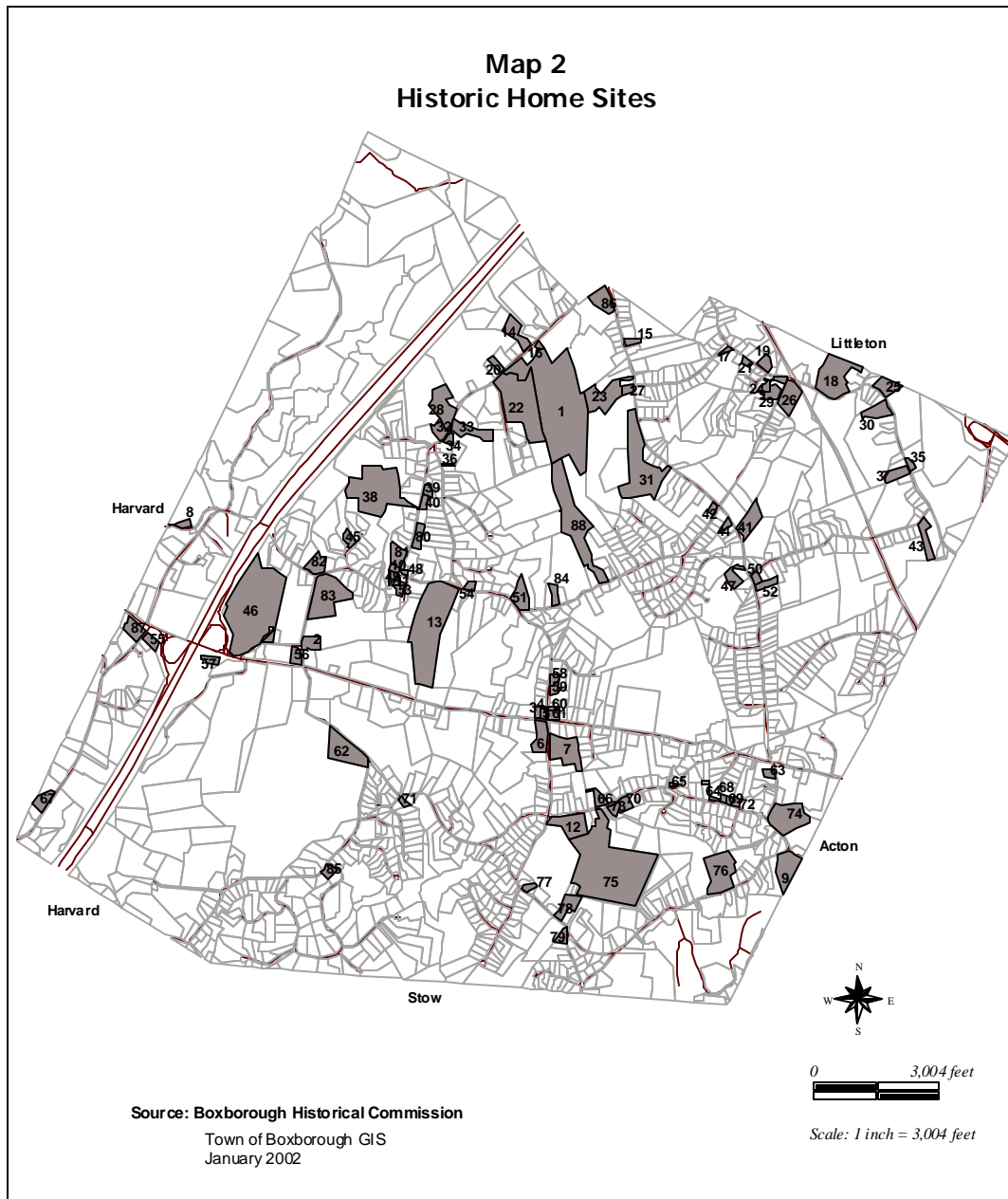
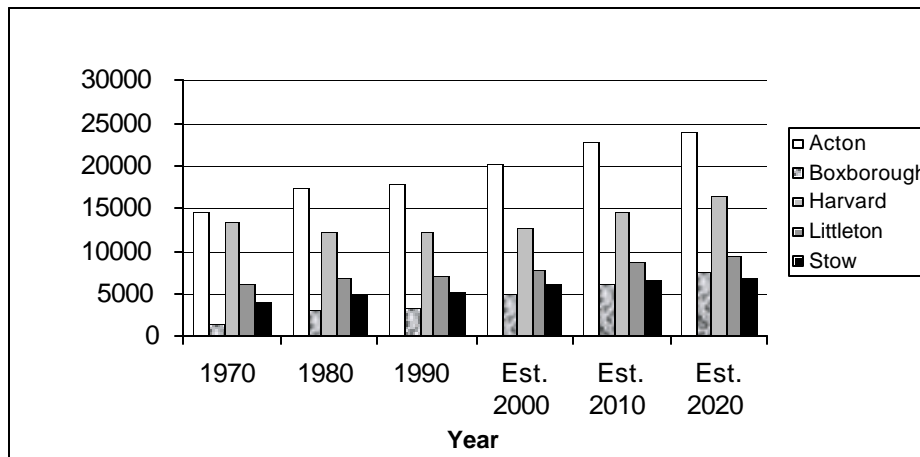
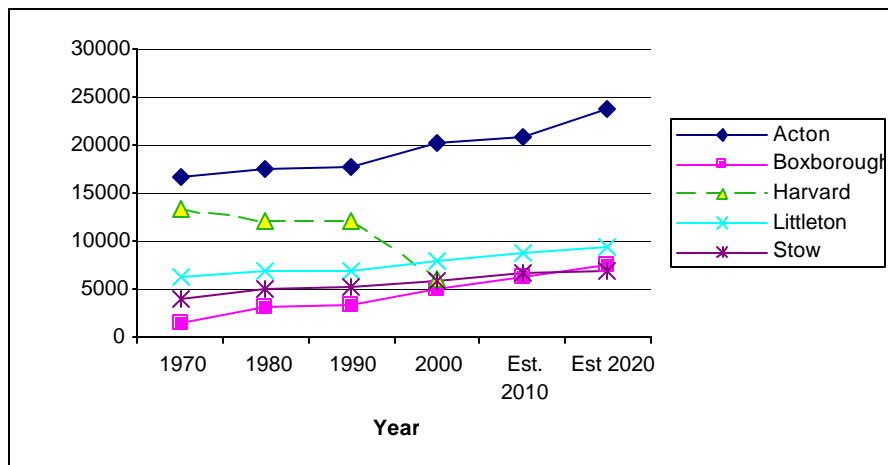


FIGURE 1: PROJECTED POPULATION GROWTH



Source: Metropolitan Area Planning Council

FIGURE 2: POPULATION TRENDS AND PROJECTIONS

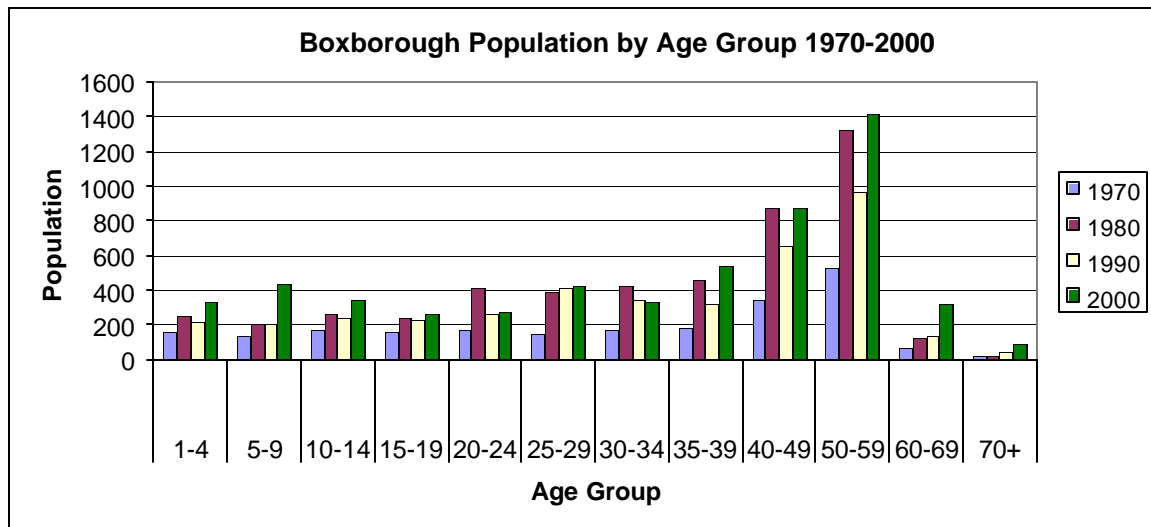


Source: Metropolitan Area Planning Council

The preceding information is useful to illustrate the evolving overall population characteristics of Boxborough. However, an assessment of age characteristics is necessary to appreciate the policy implications of population changes over time. For example, how large is the school-aged population in the town and how is it expected to change? A comparison of Boxborough to the surrounding communities is also helpful to provide some context for the population data presented above.



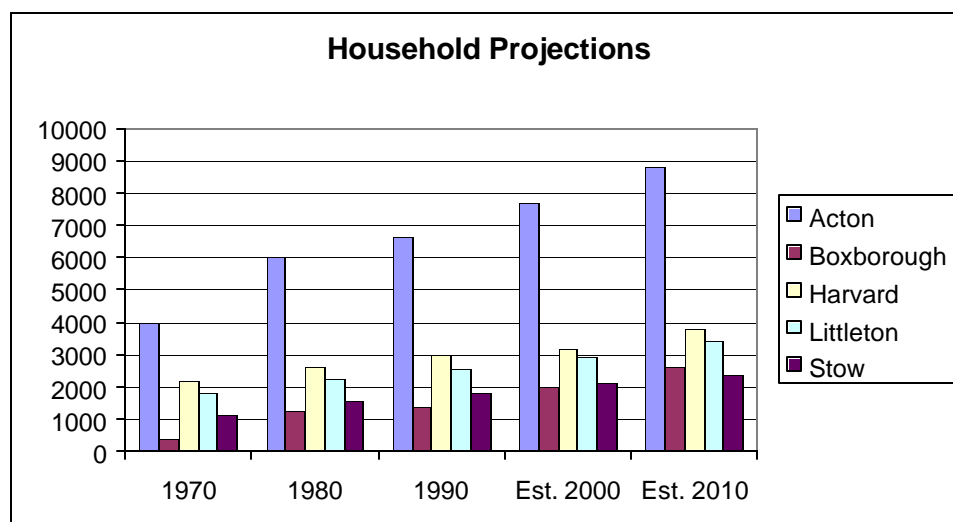
FIGURE 3: BOXBOROUGH POPULATION BY AGE GROUP 1970-2000



Source: Metropolitan Area Planning Council and Massachusetts Institute for Social and Economic Research

In terms of the number of households in Boxborough, the rate of growth has also outpaced the surrounding communities and is expected to continue in the future.

FIGURE 4: HOUSEHOLD PROJECTIONS



Source: Metropolitan Area Planning Council

## GROWTH AND DEVELOPMENT PATTERNS

Boxborough has also formed households on average at a faster rate than the surrounding towns. From 1970 to 1980, the number of households increased by 214%. This is reflective of the apartment and condominium development that occurred during that decade, when approximately 770 units were constructed. The pace of development slowed during the 1980s, but increased significantly (46%) during the 1990s. This rate of household formation was more than twice that of the surrounding towns. Boxborough is expected to continue to grow at twice the rate of surrounding towns. While Boxborough has approximately 1900 households, it is expected to add another 700 households over the next 20 years.

While the number of households been increasing, the number of persons/household has been fluctuating; according to the 2000 US Census there were 2.56 persons per for all vacant and occupied households. (2.63 per occupied household) There was a significant change in the number of persons per household in the 1970's when many apartment and condominium units were built. In 1970, household size was 3.75; in 1980 it was 2.51 and in 1990, 2.25. The 2000 U.S. Census broke the household size into owner and renter occupied units. The renter-occupied units had 1.84 people per household, while the owner-occupied units had 2.95 people per household.

A more detailed review of household formation reveals some interesting trends. What has been occurring in Boxborough in the past decade differs dramatically from previous periods.

1. From 1970-1980 adults of all age groups (except for over 70) grew significantly. The 50-59 year age group grew by more than 100% based on the town census. Both MAPC and MISER projected only small increases in this age group.
2. The 50-59 years olds in the 1990's were 30-39 year olds two decades ago. This group was the fastest growing age group at that time as well.
3. Town records indicate that the 20-29 year age group has decreased by more than 40% in the past decade while MAPC and MISER estimated small increases in this age group. This is surprising since only two decades ago this age group was the second fastest growing age group. Nevertheless, the decrease in the numbers of 20-29 year olds can be explained. Many people in their early 20's go away to college or enter the job market elsewhere and then find that coming back to Boxborough is expensive. The rising cost of housing is a barrier to entry or re-entry in the case of those who grew up in the town for the 20-29 year age group.

As important as the change in age groups is the change in household formation patterns. In general, people moving to new housing in Boxborough are families whose heads of

households are in their 40's and are rearing school-aged children. This is borne out by an analysis of new subdivisions. While the number of people per household increased from 2.25 in 1990 to 2.63 in 2000, in new subdivisions built since 1990 the number of people per household was 3.96, 40% higher than the town average, as estimated by the master plan consultants. The average family size in 2000 was 3.25. The range of density in these subdivisions was 2.33 to 4.71 people per household. In most cases, there are more children in the new larger homes, and in some cases there are extended families. In the condominium complexes that had children (excluding senior housing) the number of persons per household in 2000 was 1.41. The number of children in these units was 0.18 whereas in single-family houses the number of children per household was an estimated 1.18.

Given the pattern of household formation and the number of new single family homes being built each year, which has slowed to an average of 21 in the past three years from a high of 81 in 1993, by 2010 the number of residents would reach 5,735 and the number of dwelling units would be 2121. This population projection is less than the MAPC projection of 6,285 total residents and the MISER projection of 6,186.

## POPULATION PROJECTIONS

Understanding population characteristics and trends is an important part of the planning process since the total population and rate of growth impact housing, land, municipal services and the social and economic make-up of the town. Population characteristics are the basis for establishing projections of what Boxborough is expected to look like in the future. This information is useful for town officials to plan for the provision of efficient community services to meet future demands and needs. It is also useful for town residents in determining what kind of community they want for the future. The following is a discussion of the population trends and what they mean for Boxborough.

Although initial 2000 U.S. Census has been released, several estimates of population were based on the 1990 US Census and therefore are illustrative rather than absolute.

During the past decade Boxborough has grown faster than all but six communities in the state. Boxborough has been growing significantly faster than the communities that surround it since 1970. According to the 2000 U.S. Census from 1990 to 2000, Boxborough's population grew by 46% from 3,343 to 4,868.

MAPC, MISER, and the Executive Office of Environmental Affairs (EOEA) have projected Boxborough's population using different methodologies. The Boxborough Town Planner has also projected population using a more refined parcel-based analysis. Table 3 shows the differences in the population projections. Each agency uses a different timeline as to when build-out may occur. Nevertheless, the following lists build-out population by sources:

- Town Planner 6,650
- MAPC 7,400
- Miser 7,000
- EOEA 7,000

*Table 3: Comparison of Build-out Estimates for Boxborough*

	<b>TOWN</b>	<b>MAPC</b>	<b>MISER</b>	<b>EOEA</b>
1950	439	N/A	N/A	N/A
1960	744	N/A	N/A	N/A
1970	1451	N/A	N/A	N/A
1980	3126	N/A	N/A	N/A
1990	3343	N/A	N/A	N/A
2000	4884	4926	4978	4893
2005	N/A	N/A	5554	5554
2010	N/A	6285	6186	6186
2020	N/A	7397	N/A	6935
Build-out	6650	7400	7000	7000

Sources: Metropolitan Area Planning Council  
Massachusetts Institute for Social and Economic Research  
Executive Office of Environmental Affairs

The table below compares population projections in Boxborough to the towns that surround it. In every decade since 1970, Boxborough has grown at a faster rate than surrounding communities in part because, while rates of growth may be high, the actual numbers are relatively small. That accelerated rate of growth is projected to continue into the future.

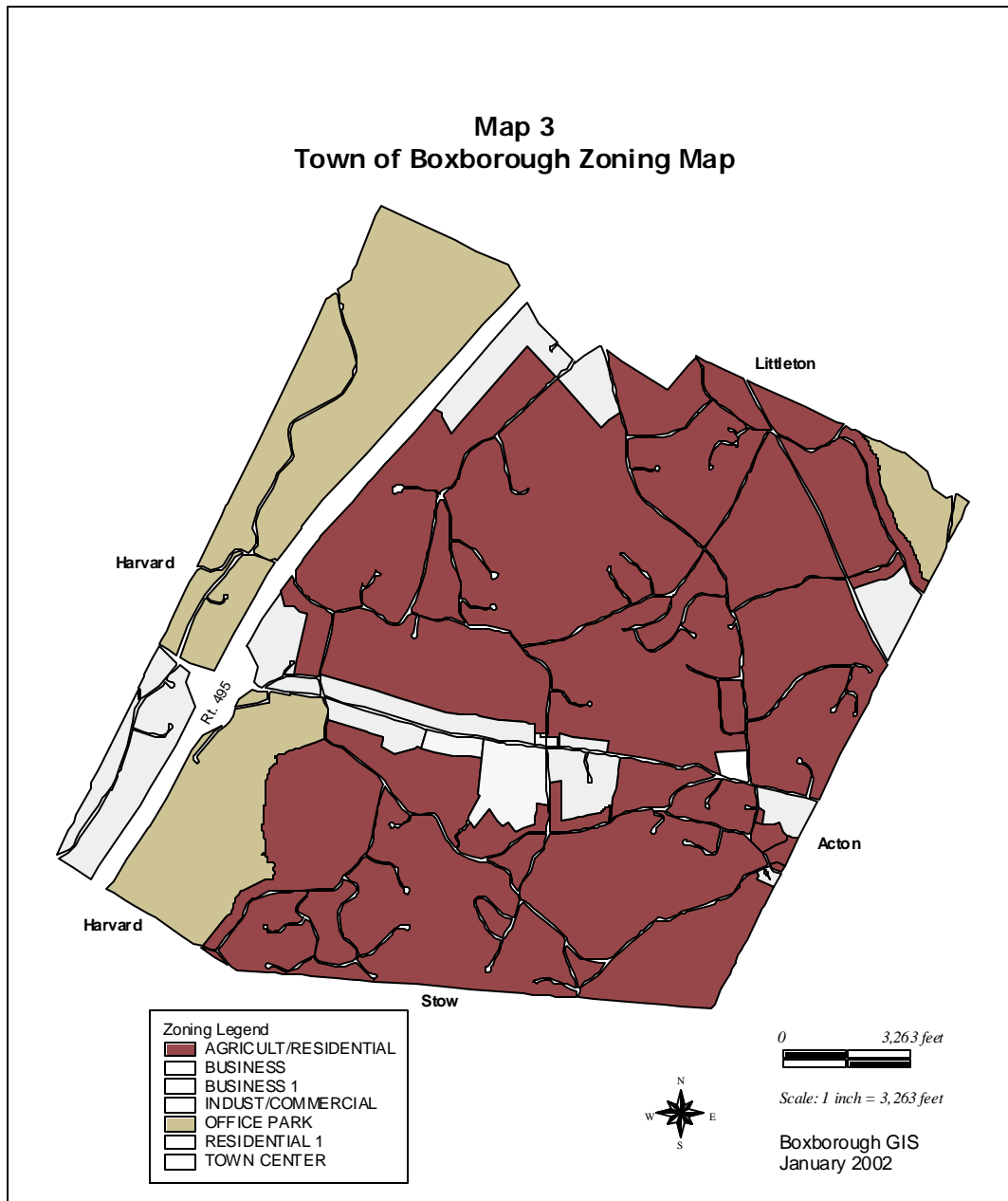
*Table 4: Comparison of Population Trends and Projections*

<b>Town</b>	<b>1970</b>	<b>1980</b>	<b>% change 1970-80</b>	<b>1990</b>	<b>% change 1980-1990</b>	<b>2000</b>	<b>% change 1990-2000</b>	<b>Est. 2010</b>	<b>% change 2000-2010</b>	<b>Est. 2020</b>	<b>% change 2010-2020</b>
Acton	14770	17544	18.78%	17872	1.87%	20331	13.76%	22704	11.85%	24017	5.78%
<b>Boxborough</b>	<b>1488</b>	<b>3126</b>	<b>110.08%</b>	<b>3343</b>	<b>6.94%</b>	<b>4868</b>	<b>45.62%</b>	<b>6285</b>	<b>29.10%</b>	<b>7397</b>	<b>17.69%</b>
Harvard*	13426	12170	-9.35%	12329	1.31%	5981	-48.5%	NA	NA	NA	NA
Littleton	6380	6970	9.25%	7051	1.16%	8184	16.06%	8854	8.19%	9438	6.60%
Stow	3984	5121	28.54%	5328	4.04%	5902	10.77%	6662	12.88%	7022	5.40%

Source: U.S. Census and estimates from Metropolitan Area Planning Council

\* Harvard's 2000 population reflects the closing of Fort Devens.

## MAP 3 Town of Boxborough Zoning Map



## BUILD-OUT SCENARIOS

The following describes the current land use scenario, the ten-year scenario and potential future build-out. To summarize each snapshot, the amount of potential development is presented.

### CURRENT LAND USE

The following table is a description of the current land uses in Boxborough using Assessor's data. This information is helpful to show how the town's land uses and amount of development may change in the next ten years and in the future. Presently, about half of Boxborough is developed.

*Table 5: Current Land Use Residential and Commercial Developed Land in Boxborough*

		<b>Acreage</b>	<b>% of Total Land</b>
<b>TOTAL DEVELOPED LAND</b>		<b>3,097 A.</b>	<b>47</b>
Residential	1,906 units	2,702 A.	41
Commercial	1,446,040 SF.	400 A.	6
<b>TOTAL UNDEVELOPED LAND</b>		<b>3,500 A.</b>	<b>53</b>

Source: 2001 Assessor's Data supplemented by Town Planner.

### RESIDENTIAL ASSUMPTIONS

It is estimated that 250 new single-family units could be added to Boxborough from 2000 to 2010 assuming 25 new units/year and 60,000 square foot minimum lot size. These new units could be located on 344 acres exclusive of land needed for new roads. Although the 1990-2000 trend is closer to 40 new units per year, the recent trend is closer to 25 per year that was used in this analysis.

### COMMERCIAL ASSUMPTIONS

From 1990 to 2000, the Planning Board approved Site Plans for approximately 570,000 square feet of new commercial development in Boxborough. For the purpose of this analysis, commercial land includes land within the following zoning districts: Industrial-Commercial (IC); Office Park (OP); Business (B); and Town Center (TC). Using the same rate of development, there could be an additional 570,000 square feet of new commercial development in Boxborough between 2000 and 2010. It is also assumed in this case that the 1.4 million square feet of the Cisco development has been constructed for a total of 1,970,000 square feet of new commercial development on 396 acres.

*Table 6: Year Build-out Scenario*

		<b>Acreage</b>	<b>% of Total Land</b>
TOTAL DEVELOPED LAND		<b>3,855A.</b>	<b>58</b>
Residential	2,156 units	3,046 A.	46
Commercial	3,416,040 SF.	809 A.	12
TOTAL UNDEVELOPED LAND		<b>2,800 A.</b>	<b>42</b>

Using these assumptions, the amount of developed land will increase, potentially, from 50 to 58% in ten years. Residential land may increase from 40 to 46% and commercial land may increase also by about 6%.

## FUTURE BUILD-OUT

The Boxborough Town Planner's analysis of the potential number of new developed acres at Build-out could be 1,438 acres of Land zoned Residential and 1,053 acres of land zoned commercial. The total number of new residential units could be 700 and the total square footage of new commercial development could be 4,232,832 square feet. These estimates were added to the existing conditions information to determine the build-out scenario.

*Table 7: Potential Future Residential and Commercial Development*

		<b>Acreage<sup>1</sup></b>	<b>% of Total Area</b>
TOTAL DEVELOPED AREA		<b>5,748 A.</b>	<b>86</b>
Residential	2,606 units	4,410 A.	66
Commercial	5,678,872 SF.	1,338	20
TOTAL UNDEVELOPED AREA		<b>908 A.</b>	<b>14</b>

This build-out indicates that 86% of the land in Boxborough could ultimately be developed. The amount of land for residential development would increase from 40% to 66%, and the amount of commercial development would change from 12% to 20%. The following table describes the potential development in Boxborough, over time:

<sup>1</sup> The developed acreage at buildout may vary slightly between the two analyses. These analyses vary according to their assumptions and data: one performed by the Massachusetts Executive Office of Environmental Affairs (EOEA), and one by the Town Planner. Because the EOEA determined developed and undeveloped land by aerial photographs, its analysis resulted in different numbers than the Town Planner's analysis that was parcel specific.

*Table 8: Boxborough Build-out Comparison*

	<b>Residential Units</b>	<b>Commercial Square Footage</b>	<b>Developed Land Area</b>	<b>Residential % of Total Land Area</b>	<b>Commercial % of Total Land Area</b>	<b>% of Total Land Area</b>
Present	1,906	1,446,040	3,097	41	6	47
10-Year	2,156	3,416,040	3,855	46	12	58
Build-out	2,606	4,235,127	5,748	66	20	86

#### USING 1990-2000 TRENDS

##### Residential

Using the trending information from 1990-2000, at a rate of 400 new residences every ten years, Boxborough could be built out in terms of Residences within the next 15-20 years.

##### Commercial

Depending on whether the 1,400,000 square foot Cisco development is included as a trend, Boxborough's commercial land could reach build-out at different times.

- If the large Cisco development is included, and Boxborough has 1,970,000 square feet of new commercial construction every ten years, build-out could occur within 20 years. It should be noted that the Cisco Systems development site is unique in its size. No other site in Boxborough would support a development as large as Cisco's, so it is unlikely that build out could occur within 20 years.
- If the Cisco development is not included, the rate of development could be 570,000 square feet of new commercial development every ten years. At this rate, the town would not be build-out in terms of commercial land for 50 years.

#### USING 1995-2000 TRENDS

##### Residential

If housing trends continue according to the 1995-2000 trends at a rate of 250 new residences every ten years, Boxborough could be built-out in terms of residences within the next 25-30 years.

##### Commercial

From 1995 to 2000 there have been 540,000 square feet permitted in Boxborough, the majority of the new commercial square footage over the past ten years. Using these past five years, instead, as a trend, the increase in square footage for the next ten years could be 1,080,000.



Depending on whether the Gsco 1,400,000 square foot development is added to the trending data, Boxborough's commercial land could reach build-out at different times.

- If the large Cisco development is included, and Boxborough has 1,980,000 square feet of new commercial construction every ten years, build-out could occur within 15 years.
- If the rate of development continues at a pace that does not include the Cisco development or 1,080,000 square feet of new commercial every ten years, the town would not be built out in terms of commercial land within the next 25 to 30 years.

Each build-out analysis and population projection has a different associated cost of community services (Table 9). The most significant difference is the projected number of school-aged children. The method and data used by different agencies to determine buildout result in slightly different projections. This points to the need for close monitoring of the school age population. The U.S. Census has not yet released a detailed age breakdown for the 2000 census; it is expected in 2002. Those figures may give guidance as to which projection is more accurate.

*Table 9: Comparison of Community Services Costs at Build-Out*

	<b>Existing</b>	<b>Town</b>	<b>MAPC</b>	<b>EOEA</b>
Population	4,868	6,949	7,397	6,935
Households	1,931*	2,832	2,670	2,935
School-Age Children	1,090	2,180	2,056	1,394
Elementary Children	631	1,014	1,193	808
Solid Waste Usage (tons)	183	261	277	260
Water Usage (gal.)	365,100	521,175	554,775	518,250

\* Reflects a 2001 estimate of households.

## EOEA – DEVELOPABLE LAND

Starting in 1999 the Massachusetts Executive Office of Environmental Affairs (EOEA) performed a build-out analysis for all communities in Massachusetts. Through this process the EOEA has identified the undeveloped areas in Boxborough and separated them by zoning district. The analysis resulted in numbers that are larger than those arrived at by the Boxborough Assessor or the Town Planner because they were determined by analysis of aerial photographs to identify all undeveloped areas rather than by analysis of parcels. Chapter Lands, which are presently undeveloped, are included as undeveloped land. The results are shown below.

	Acres	Percent of Total Land Area
LAND AREA THAT IS DEVELOPABLE:	2,308	35
Residential	1,577	24
Commercial	730.2	11

In determining the build-out, the EOEa discounted some (partial constraint) or all (absolute constraint) of the land that it considered a constraint. For example land within the 100 foot buffer zone of a river was considered as an absolute constraint; however, wetlands, 500-year floodplain and the 100-200 ft. buffer of a river were considered partial constraints. Other assumptions about the build out were based on the existing zoning dimensional regulations to determine the number of potential new housing units and the amount of potential commercial development.

Limitations of on-site septic systems were also considered but the 20% maximum impervious surface in the Aquifer Protection Overlay District were not considered as constraints because the land could still be used to FAR requirements. The Cisco development was considered as developable.

### **EOEA – Additional Development**

#### *New Development*

Residential	884 lots
Commercial	2,772,426 square feet

### **Planning Department**

The build-out performed by the Boxborough Town Planner was based on specific knowledge of Boxborough's land and regulatory and environmental constraints as well as current knowledge of the potential and proposed developments. The Planner used parcel-based information and included on-site wetlands that were less than 50% of the parcel, but not town-owned parcels. The Planner's estimates are higher than the Assessor's estimates because the Town Planner, like the EOEa, included undevelopable land in the analysis that could be used to satisfy FAR requirements.

### **PLANNING DEPARTMENT DEVELOPABLE LAND**

	Acres	Percent of Total Land Area
<b>Land that is developable</b>	2492 Acres	38
Residential	1438 Acres	21.5
Commercial	1054 Acres	16.5

#### **Assumptions:**

- Office Park and Industrial Commercial land will be developed at a FAR of .1.

- If wetlands exceed 50 percent of the parcel acreage, they were not included in the FAR calculations.
- Business and Town Center land will be developed at 6,000 square feet per upland acre.
- Underdeveloped parcels were not included (i.e. parcels that contain buildings but could be further developed under existing bylaws.)
- The new 175,000 sf. building under construction, Tech Central at the former 3 COM site was included in this analysis.
- Present iteration includes actual square footage for proposed, unbuilt projects.
- Revised Towermarc/Cisco parcels based on actual project, other Towermarc/Cisco site plans are included in the build-out analysis.
- Parcels currently taxed under the provisions of M.G.L. Ch. 61, 61A, and 61B were not deleted from the analysis, as these properties are not permanently protected<sup>2</sup>

In October of 2000, Boxborough published an Affordable Housing Study Committee (AHSC) Report and Recommendation on Affordable Housing in Boxborough. As background for this analysis, the Boxborough Town Planner estimated that 656 new housing units could be developed without consideration of affordable units. The AHSC study estimated that the number could be closer to 700 assuming that 150-160 units would be converted from existing housing units to deed restricted housing units. If comprehensive permits were used to develop residential and commercially zoned land, the additional number of housing units could be as high as 1,336; however, this scenario is unlikely.

*Table 10: Comparison of Build-out Information*

<b>Source:</b>	<b>Total Developable Acres</b>	<b>Commercial Developable Acres</b>	<b>Commercial Potential Development – square feet</b>	<b>Residential Developable Acres</b>	<b>Residential Potential Development – housing units</b>
EOEA	2,308	730.2	2,772,426	1,577	884
Planning	1,923	1,020	3,735,127	903	700

<sup>2</sup> These include parcels with State Land use codes in the 600 - 899 range

## TRANSPORTATION NETWORKS

Boxborough's roads are classified as arterials, collectors and local access roads. The primary arterials are Interstate 495, Route 2 and Route 111. Liberty Square Road, Hill Road, Old Harvard Road, Burroughs Road, Flagg Hill Road, Summer Road, Pine Hill Road, Middle Road Picnic Street, Davidson Road, Sargent Road, and Littlefield Road are considered collector roads. The remaining roads are local access roads.

In November of 2001, 3 sets of traffic lights were installed in Boxborough, the town's first traffic lights. The signals are located at the I-495 Northbound and Southbound ramps; and at the Codman Hill/Swanson Road intersection. The signals were installed by Cisco Systems Inc. to mitigate traffic impacts associated with the approved 900,000 sq ft campus off Swanson Road. In December 2001, Cisco received MEPA approval for a 500,000 sq ft expansion at the Swanson Road site. Additional improvements along Route 111, including a second turning lane for the I-495 Northbound ramp is proposed for the expansion. The widening of Route 111 in the vicinity of the Boxborough Executive Center (Gutierrez) along Route 111 is also proposed as mitigation for the Gutierrez project.

The commuter rail runs through, but does not stop in Boxborough. The closest T - stops are on Foster Street in Littleton and on Central Street in Acton. Minuteman Airport in Stow is a privately owned airport with facilities to land twin engine planes. The owner of the airport has completed a Master Plan to enable him to apply for federal funds for airport expansion. The owner has received MEPA approval for runway and safety improvements. The airfield owner has purchased land in Boxborough located in the Heath Hen Meadows subdivision in the clear zone. The clear zone is a trapezoidal area of land recommended by the Federal Aviation Administration (FAA) to be clear of all obstructions. A local family is farming some of this land. A self-serve farm stand is also on the property.

## SEWER AND WATER SERVICES

Boxborough receives approximately 43 inches of annual rainfall. About 17% of the total land in Boxborough is wetland. Boxborough has six streams within its borders. Although Boxborough does not have any lakes or ponds serving as public water supply, there are a few that provide public safety resources and wildlife habitat. Boxborough has four significant sand and gravel aquifers. The EOEA estimates current water use at 122,542 gallons per day, based on 75 gpd per person and 75 gpd or 1000 square feet of gross floor area of commercial space. A 1994 report on Boxborough's water resources indicates that Boxborough does have a groundwater supply that is sufficient to support the community at build-out using the current zoning. The report indicated, however, that water quality might be a future issue. A new bedrock well was created for Blanchard Memorial School, Police Department, Fire Department and possible new Library. The purpose of this well is to replace an existing well for the School with elevated nitrate concentrations and potentially to provide municipal water.

The EOEa used existing information to determine some of the potential impacts on the Town's infrastructure, including water use and municipal solid waste. According to their calculations, residential water use at build-out will probably be above 500,000 gallons per day. Including commercial land, water use might double that figure. Considering the impact that build-out will have on the water supply, Boxborough will have to make an investment in protecting water quality. Some options include better monitoring, with water sampling programs, Board of Health records on the location of septic systems and incidences where the systems have failed. Other options might include the development of local water systems to serve concentrations of business and commercial uses. The Town of Boxborough could also implement a comprehensive public water system. The town has retained CDM to identify potential public water supply locations; and to investigate the need and process for implementing a municipal water supply system. A technical memorandum has been issued by CDM describing the existing conditions and recommending areas for future water exploration.

Boxborough presently does not have a public sewer system. Most residents and businesses are served by private septic systems. There are some wastewater treatment facilities, one at the Holiday Inn, 1414 Massachusetts Avenue, 80-90 Central Street, and treatment plants are under construction at Brook Village condominiums, Boxborough Meadows Comprehensive Permit and Cisco, East Coast Headquarters. In 2001 a new septic system was installed at Blanchard Memorial School on the Hager land. The system is designed for the Blanchard Memorial School, Fire Police and Highway tie-ins with potential for serving future needs.

Wastewater effluent will increase at a similar rate that water use increases. To protect water quality, the formation of policies or infrastructure improvements for wastewater may become necessary. Meetings with department heads and Town Boards, where there were attempts to identify potential infrastructure improvements needed in Boxborough, have not identified the creation of a municipal sewer system as a potential improvement. There are wastewater treatment facilities in Boxborough and some of the large-scale developments under construction will have wastewater treatment facilities.

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## SECTION 4 - ENVIRONMENTAL INVENTORY AND ANALYSIS

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### GEOLOGY, SOILS AND TOPOGRAPHY

The topography of Boxborough is varied. (Map 4) The most prominent topographic feature is the ridge of land that runs in a northeasterly direction roughly from Middle Road, paralleling Route 495 into Littleton. Hill Road is the ridge line of this feature from which slopes generally fall off to either side. The ridge divides approximately at Picnic Street and some of the most dramatic topography is created in the three-fingered elongated hills: one is skirted by Picnic Street, and climbed by Old Orchard Lane, a second is overridden along its crest by Hill Road, and a third swings westward, more or less parallel to I-495. The elevations of the three hills east to west are 468.4, 458.7 and 455 feet above mean sea level. These are the three highest points in the Town with the exception of Flagg Hill, the second highest point in Boxborough.

The middle ridge is the historic center of town. The first meeting house and the first Town Hall, which was later destroyed by fire, were located here. The Town Library and the old Town Common now occupy this site. The western ridge slopes downward to Beaver Valley and Beaver Brook. I -495 runs along the shoulder of this ridge. Between Beaver Valley and I-495 is the Boxborough Esker or Ridge Hill. The esker is a ridge formed from gravel deposited by a melt-water stream running through a crevasse in the glacier which covered this area over 15,000 years ago. Ridge Hill is one of the best examples of a preserved esker in New England, the esker is 2-1/2 miles long and at its crest, rises 45 feet above the valley floor.

To the east and then curving gradually to the south, the land flows more moderately from the ridge. Several hills that rise over 400 feet are scattered throughout the southern section of the Town. Flagg Hill, the second highest point in Boxborough rising 465.4 feet above sea level, is located in the southeast corner of Boxborough.

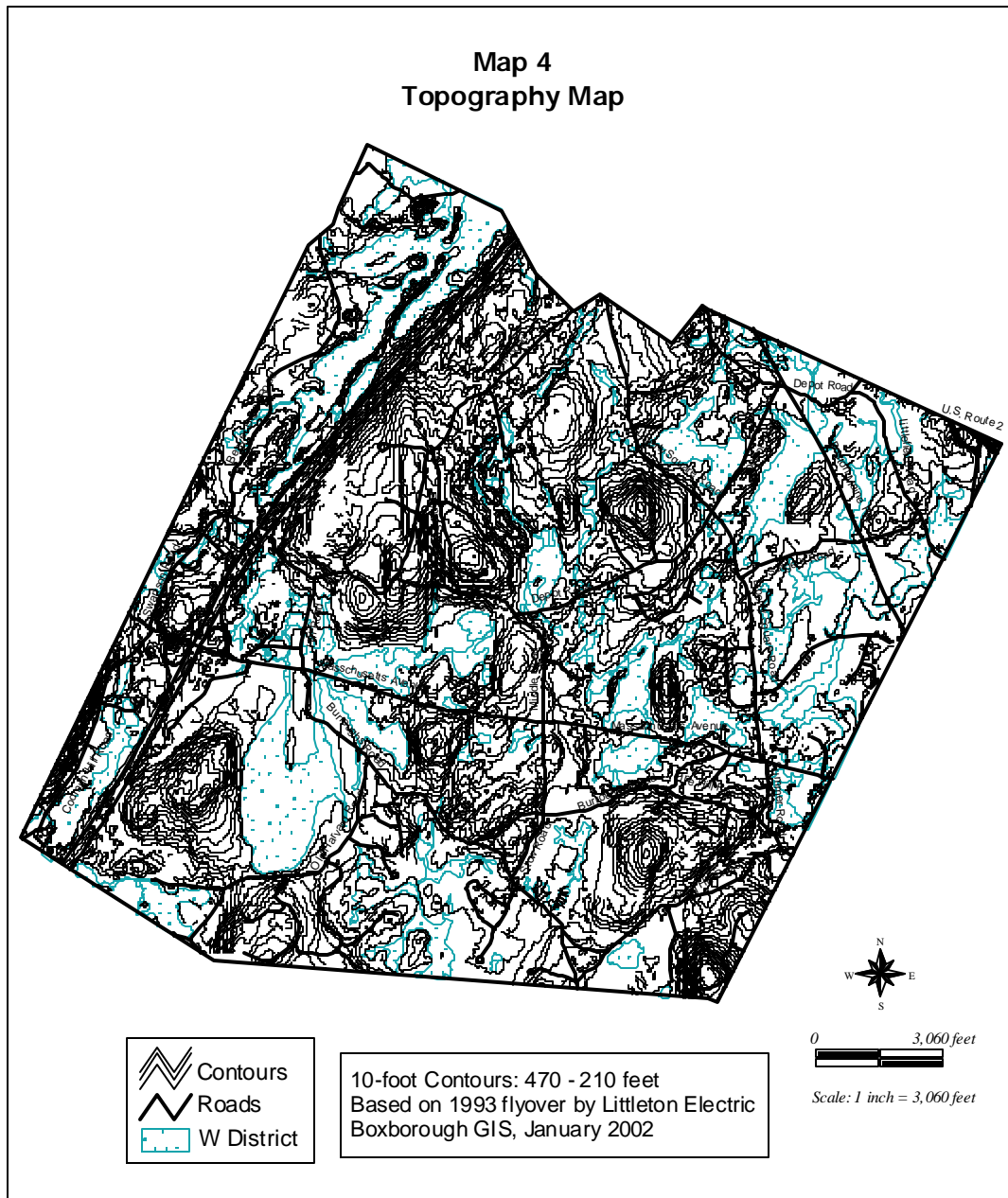
Three general soil associations occur in Boxborough: Paxton-Hollis-Woodbridge, 54 percent; Muck-Whitman, 26 percent; and Hinkley-Deerfield, 20 percent. (Map 5) The Paxton-Hollis-Woodbridge association soils have a shallow depth to bedrock; they are well-drained to moderately well-drained stony soils with hardpan located 1-1/2 to 2 feet from the surface. Slopes range from 3-35 percent. Hardpan layers have slow permeability rates making them less suitable for septic systems.

The Muck-Whitman association soils are very poorly drained organic or mineral soils on low lying, level terrain. The water table in Muck-Whitman soils is at or near the surface during most months in the year. While these soils are good for wildlife habitat, they offer severe constraints for development. Hinkley-Deerfield soils are moderately well drained;

sandy gravelly soils with slopes ranging from 0-35 percent. The water table often rises to 1-1/2 to 2 feet from the surface during the winter and early spring. The less steep Hinkley-Deerfield soils have slight development constraints. Drinking water wells drilled in these soils generally yield high quantities of water.

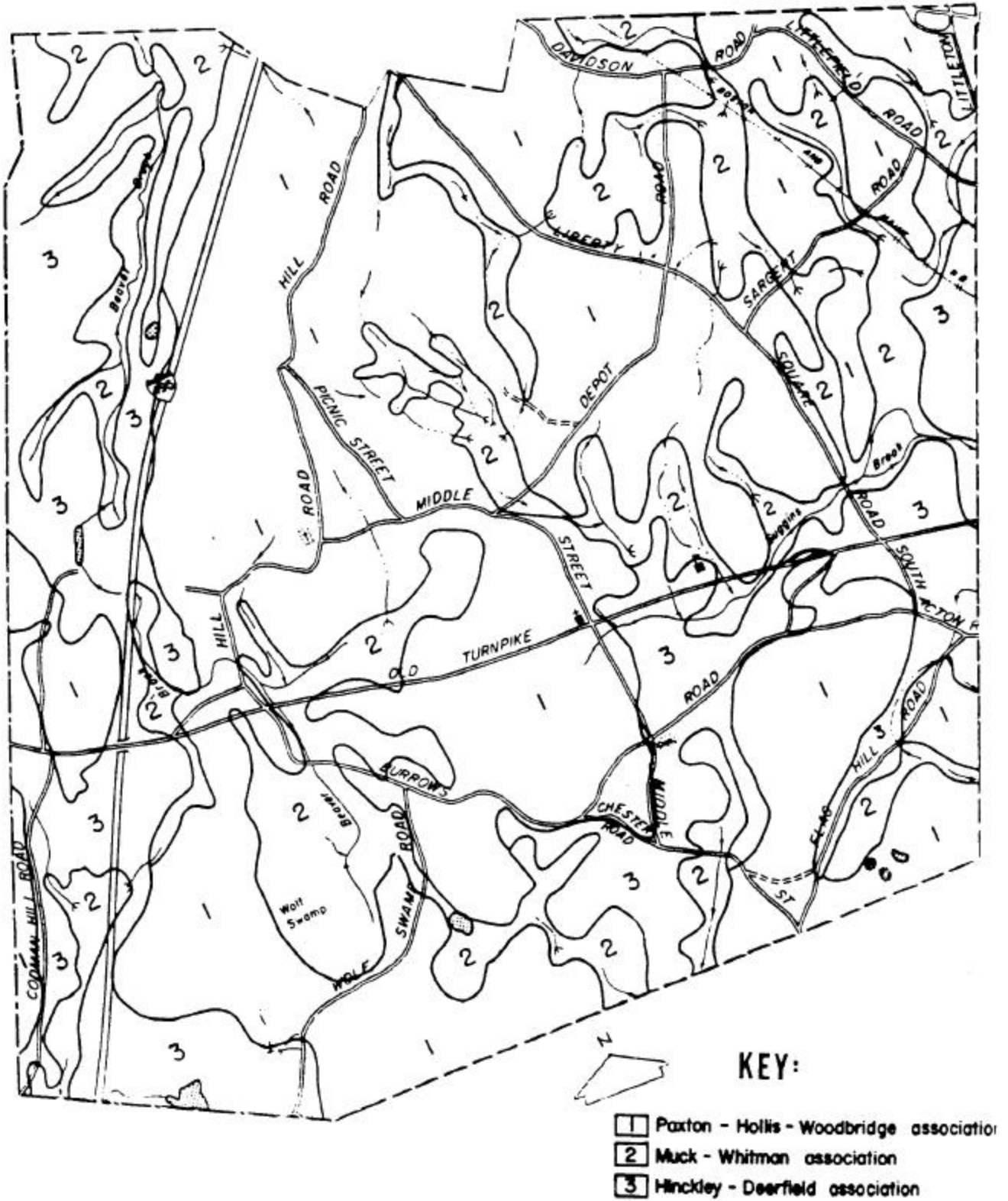
In general, Boxborough's soils are only capable of supporting low intensity development because of septic and building constraints. About 85 percent of the town is categorized as having severe constraints for septic system disposal. Severe constraints are considered to be one or more of the following: a) shallow depth to bedrock, less than 5.5 feet; b) wetness; c) severe slopes, greater than 15 percent; and d) hardpan.

## MAP 4 Topography





## MAP 5 Soils



## WATER RESOURCES

Sixteen percent of the total land area in Boxborough consists of wetlands: 1,100 wetland acres of a total 6,656 acres. (Map 6) Wetlands are distributed rather evenly throughout the town. Larger wetlands include Wolf Swamp, Heath Hen Meadows, Beaver Brook wetlands, and Guggins Brook wetlands. Wetlands play an important role in the ecology of Boxborough; they filter out sediment, nutrients and other pollutants from rainwater and road run-off. During periods of flooding and rapid rainfall wetlands are able to store water, thereby reducing flooding. In drier weather, wetlands help regulate stream flow.

In 1974, Town Meeting adopted a Wetlands and Watershed Protection Overlay Zoning District (W-Wetlands District) which is administered by the Board of Appeals. Any construction within 100 feet of the W-Wetlands District requires a Special Permit. The Conservation Commission is also responsible for protecting wetlands. The Conservation Commission has adopted a local Wetlands Bylaw that establishes a set of criteria for working within the 100 foot buffer of the wetlands. In addition to granting permits under the local Wetlands Bylaw, the Conservation Commission also administers the State's Wetlands Regulations promulgated under the Wetlands Protection Act.

All of Boxborough's brooks drain via intermediaries into the Merrimack River. Boxborough's brooks include Elizabeth Brook, Beaver Brook, Heath Hen Meadows Brook, Fort Pond Brook, and Inch Brook. The corresponding drainage basins for each brook are shown on Map 7. Table 11 below gives the approximate area of the basins.

*Table 11: Approximate Drainage Areas*

<b>BASIN</b>	<b>ACRES</b>	<b>PERCENT OF TOTAL</b>
Guggins Brook	2050	30.8
Fort Pond Brook	650	9.8
Inch Brook	140	2.1
Heath Hen Meadow	930	14.0
Beaver Brook	2340	35.1
Elizabeth Brook	550	8.2

Source: Melia, Policies for Future Land Use Development.

Drainage flows out of Boxborough in all directions; therefore, land use decisions in Boxborough effect water quality in Acton, Littleton, Stow and Harvard. Both Littleton and Acton have public drinking water wells located near the Boxborough border. Boxborough must take great care not to pollute or damage these water sources. Surface water flows into Boxborough from two places: 1) land in Beaver Valley receives run-off from a hill in Harvard, and 2) land in Boxborough near the Littleton town line receives surface water from the Heronry in Littleton. Boxborough has no lakes or ponds of significant size. However,

there are several ponds that provide for recreational opportunities and wildlife habitat. The ponds are as follows:

- Flag Hill Pond, a 12 acre pond (a majority of this pond is now owned by the town).
- Elderidge Pond, a two acre pond located where Elizabeth Brook widens into a pond.
- Muddy Pond, a one acre pond located between the esker and I-495.
- Fort Pond Brook Pond, a two acre pond located within Fort Pond Brook, on the Acton-Boxborough town line.

In addition, there are 11 fire ponds located throughout Boxborough as part of a comprehensive town-wide fire protection system. Fire ponds ranging from 60,000 gallons to two million gallons are located along Massachusetts Avenue, Pine Hill Road, Stow Road, Burroughs Road and Old Harvard Road. Fire ponds are proposed in the Gutierrez Boxborough Executive Office Park and the Cisco Site 2. An additional fire pond should be developed to the north of Route 111 in a central location. Unfortunately, fire protection provisions have been hampered by the Department of Environmental Protection's concerns about altering wetlands to create ponds.

Boxborough has no town water or sewer. All developments are serviced by private wells and septic systems. Almost all of the Town depend on bedrock wells for their water supply, the remaining residents draw their water from one of the Town's sand and gravel aquifers. Major sand and gravel aquifers and their recharge areas were delineated by IEP in 1984. The aquifers and their recharge areas are shown below in Table 12. Aquifers that meet the following criteria could be used as a public water supply: a) surficial geologic deposits of proper size and sorting to produce high rates of water movement; b) sufficient saturated thickness of surficial deposits; c) sufficient area recharge; and d) acceptable water quality. Protection of aquifer areas is especially important as it is more economical to preserve water quality than it is to clean a contaminated water source.

*Table 12: Major Surficial Aquifers and Their Recharge Areas*

<b>AQUIFER NAME</b>	<b>AREA (SQ. MI)</b>	<b>RECHARGE (MILLION GPD)</b>
Elizabeth Brook	2.25	0.79
Beaver Brook	3.4	1.41
Heath Hen Meadow Brook	1.50	.49
Guggins Brook	4.29	1.32

Source: Geoscience (IEP)

The physical constraints of the town's varied topography and fractured bedrock would make the construction of a town-wide water system prohibitively expensive. Instead, local

systems serving a region, or joining with an existing supplier, are more likely to be feasible for a regional water supply.

As a result of the Balanced Growth Plan, an Aquifer Overlay Zoning District Bylaw was implemented in 1984. The bylaw prohibits certain uses in the aquifer zone, limits the rate of septic discharge, and sets forth a maximum lot coverage standard. The Town has established a ground water monitoring program via a cooperative venture with the Littleton Water Department to assess the environmental effects of commercial septic effluent on regional ground water quality. Developments submitted for Site Plan Approval are required to install ground water monitoring wells. Testing is performed twice a year. Currently, there are 29 monitoring wells being tested in Boxborough. There are three wells on 80/90 Central Street; four wells at 60 Codman Hill Road; two wells at the Boxborough Office Park on Massachusetts Avenue; five wells at 1414 Massachusetts Avenue; four wells at the Cisco Site 2 on Adam's Place; four wells at the Boxborough Technology Park on Swanson Road; three wells at Boxborough Commons on Massachusetts Avenue; and four wells at Boxborough Business Center on Codman Hill Road. The water quality tests measure levels of the following: Ph; Conductivity; Positive Ions: Magnesium, Calcium Iron, Manganese, Sodium, Potassium; Negative Ions: Alkalinity, Chloride, Sulfate, Heavy Metals: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver, Barium; total Nitrate and Nitrite Nitrogen; Ammonia Nitrogen; and Halogenated and aromatic hydrocarbon pollutants as specified by EPA Method 624 (38 Chemicals). In several instances ground water testing has detected elevated levels of sodium and nitrates, two indicators of ground water pollution. Although the concentrations did not exceed safe drinking water quality standards, the Littleton Water Department is monitoring these situations closely. In addition to a regular testing program, an applicant developing land in Boxborough is required to file a hazardous materials plan with the Fire Department. The plan includes a list of all hazardous materials used on the site, the quantities, and where the substances are stored. Also included are procedures to follow in the event of a spill. The hazardous materials plans are used to assist the fire department. In the event of a fire, the Department knows whether flammable materials are in the building, and if so, where the chemicals are located. In addition, the hazardous materials plans are compared with water quality reports to determine if chemicals used in or on the premises are being discharged into the groundwater.

## VEGETATION

Boxborough contains forests, meadows, pastures, and wetlands vegetation. The majority of the forested areas in Boxborough contain mixed hardwood and softwood forests, with tree heights ranging from 20 feet to 70 feet. Non-forested areas have been cleared for mining, farming, or land development. There is a Beech-Hemlock Grove located on the hill above Depot Road and Liberty Square Road and a mature stand of birch trees in the parcel of land donated to the town by Anne Steele (The Birchwoods). There is also an impressive American Chestnut tree within the right-of-way of Depot Road near Davidson Road.

## WILDLIFE

There are several areas in Boxborough where the Massachusetts Division of Fisheries and Wildlife Department, Natural Heritage and Endangered Species program has identified rare and endangered species. The Bittern Amphipod, the Spotted Turtle, the Blandings Turtle, the Blue-spotted Salamander and the Great Blue Heron are several rare species found in Boxborough. Although the Town of Boxborough has not completed a town-wide inventory of wildlife, information submitted in Environmental Impact Reports have identified the following mammals: shrew, gray fox, mouse, eastern cottontail, eastern chipmunk, red and gray squirrel, red fox, raccoon, woodchuck, fisher, mink, long-tail weasel, beaver, white tail deer, ground hog, red squirrel, opossum, skunk, coyote, and moose. In addition, many bird species have been identified in Boxborough. A list of Bird species kept by resident Jenny Michaels is included in Appendix B.

Associated with the many wetlands in Boxborough are several areas of Estimated Habitats of Rare Wildlife, which are regulated under the Massachusetts Wetlands Protection Act (310 CMR 10.00). These areas have been identified by the Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program as containing one or more species officially listed as endangered, threatened or of special concern in Massachusetts. Seven species are listed among five habitat areas in Boxborough as outlined in Table 13.

Table 13: Rare Species in Boxborough				
Common Name	Latin Name	Taxon	Status	Habitat Area(s)
American Bittern	<i>Botaurus lentiginosus</i>	Bird	ENDANGERED	WH 142
Blanding's Turtle	<i>Emydoidea blandingii</i>	Reptile	Threatened	WH 7209
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Amphibian	Special Concern	WH 127, WH 142, WH 584
Common Moorhen	<i>Gallinula chloropus</i>	Bird	Special Concern	WH 142
Least Bittern	<i>Ixobrychus exilis</i>	Bird	Endangered	WH 142
Mystic Valley Amphipod	<i>Crangonyx aberrans</i>	Crustacean	Special Concern	WH 127
Spotted Turtle	<i>Clemmys guttata</i>	Reptile	Special Concern	WH 127, WH 3014, WH 7209

The three bird species listed include the endangered American bittern (*Botaurus lentiginosus*), the endangered least bittern (*Ixobrychus exilis*), and the state special concern common moorhen (*Gallinula chloropus*). The American Bittern is a medium-sized ground-dwelling heron, which spends most of its time hidden among marshland vegetation. These birds have short thick necks with a black patch on either side and are mottled brown and buff on top with brown and white streaked undersides. The least bittern is the smallest

member of the heron family (11-14") and lives in freshwater marshes where cattails and reeds predominate. Least bitterns are chestnut and buff colored with black and green heads. The common moorhen is a duck-like bird just over a foot long and inhabits large freshwater marshes and ponds with cattails. They are dark gray with a prominent red bill with a yellow tip.

There are two listed reptiles, the threatened Blanding's Turtle (*Emydoidea blandingii*) and the state special concern spotted turtle (*Clemmys guttata*). The Blanding's Turtle is medium sized with a long neck and a high domed shell exhibiting yellow spots and streaks. They are primarily aquatic; preferring densely vegetated shallow ponds, marshes, and small streams. The spotted turtle is a small turtle often displays bright yellow round spots covering its black shell, however, some turtles of this species lack spots altogether. Spotted turtles inhabit wetland habitats such as marshy meadows, bogs, small ponds and brooks, ditches, and other shallow unpolluted bodies of water.

The only amphibian listed is the special concern blue-spotted salamander (*Ambystoma laterale*). The blue-spotted salamander is characterized by dark blue to black dorsal pigmentation with much lighter ventral pigmentation and bright blue spots on the lower part of their body. They are typically found in northern hardwood forests and rely on vernal pools for breeding. The Mystic Valley Amphipod is the only crustacean in Boxborough listed as a state special concern species. They are endemic to southeastern New England and found in lowland aquatic habitats especially red maple and white cedar swamps. They have 14 body segments with paired segmented appendages. The females are vivid greenish blue in color and typically 7-10mm in length. Males are orange-brown in color and slightly smaller and thinner than the females (5-6.5mm).

## SCENIC RESOURCES & UNIQUE FEATURES

Boxborough has many cultural, historic and scenic resources. The rural, winding, stone wall lined roads; the historic houses; the farmlands, open fields and meadows are some of the Town's assets. Particularly scenic viewpoints are the "Cathedral of Trees" creating an archway identified as the hallway of Boxborough, the 25 mile view from the town library, the view of the open field from Whitcomb Road and Hill Road, and the view of Steele Farm and beyond from the intersection of Middle Road and Picnic Street.

Twelve town roads have been designated as scenic roads: Burroughs Road, Hill Road, Old Harvard Road, Davidson Road, Depot Road, Sargent Road, Liberty Square Road between Depot and Sargent Road, Littlefield Road between Sargent and Depot Road, Middle Road between Hill Road and Depot Road, Picnic Street, Pine Hill Road, and Stow Road from Route 111 to the Stow town line. According to the Town's Scenic Road Bylaw, trees or stone walls located along a scenic road cannot be removed until a hearing is held and specific permission is granted. In FY01, 70 parcels of land (921.8 acres) are taxed under the Farm and Forest Preferential Taxation Program Chapter 61 and 61A. These lands offer scenic pastoral views of agricultural and productive wood lands. Some of the examples of the farms under this program are the Ridge Hill Farm owned by Ruth and Donald Morse on Hill Road, the Richardson Farm owned by Virginia and Clyde Richardson on Middle Road,

The Robinson's Farm on Hill Road, and George Krusen's squash patch on Littlefield Road. These farms are current reminders of Boxborough's agricultural past. See Appendix C for a list of all Chapter parcels.

Other unique resources include the four original one room school houses. Three of the schools have been converted to residences. One of the school houses, School #2, owned by George Robinson, has been restored. Once a year school children are invited to the school house to experience what it was like to attend one of Boxborough's first schools. The old carriage roads, the old town center, the old mill sites, and the small pox grave are other examples of historic resources. One old carriage road is used informally as a hiking and bridle trail. The road descends from Hill Road down the southeast slope of the ridge to Depot Road. This road was constructed to connect Littleton with Stow, before Boxborough was incorporated. Littleton completed the section they were responsible for but Stow never constructed their half. The road was officially abandoned in 1789, six years after the Town of Boxborough was established. The carriage road trail passes near the Boxborough Historical Society's archaeological dig that is at the site of a house occupied in the third quarter of the eighteenth century.

The Boxborough Esker is a unique natural resource. The Nature Conservancy, a private non-profit organization whose purpose is to preserve and protect land resources, owns the esker. Members of the Conservancy conduct guided walks of the esker. There are also walking trails within the Conservancy's land. The esker is located within the Beaver Valley that has been identified as one of the town's special landscapes. The valley contains Beaver Brook and its associated wetlands, areas of mature tree stands, and diverse wildlife habitat. Beaver Brook has been nominated as a scenic river under Massachusetts's Scenic River Program.

## ENVIRONMENTAL THREATS

Boxborough has experienced some "21E" activity (Table 14). Massachusetts General Laws Chapter 21E and its associated regulations, known as the Massachusetts Contingency Plan (MCP), provide stringent rules related to identifying, reporting, and clean up of hazardous materials. Luckily, the list for the last decade is relatively short. Additionally, it should be noted that Massachusetts has stringent regulations related to the construction of USTs and hazardous waste storage facilities near sensitive resources such as water, wetlands and streams. These land use "siting" regulations combined with the aggressive MCP program serve a protective role to Boxborough's cherished resources.

To date, the release of hazardous materials has not had a profound effect on the town, although sometimes such a release creates a perception problem in the eyes of the real estate community.

Table 14: Hazardous Materials Releases

Release Tracking #	LOCATION		Date	Status*
2-0000026	1425 MASS AVE	B&F EXXON STATION	1/15/87	Open
2-0000412	SUMMER RD	JOYCE INDUSTRIAL PARK	7/15/88	Open
2-0000928	WHITCOMB AVE	CHU ASSOCIATES INC	10/15/92	Closed
2-0010134	SWANSON RD	MHD FACILITY 30	12/28/93	Closed
2-0010209	STOW RD	NE OF MINUTE AIR FLD	2/28/94	Closed
2-0010349	1425 MASSACHUSETTS AVE	EXXON STATION	6/22/94	Closed
2-0010405	62 MASSACHUSETTS AVE	NASHOBA VLY OLYMPIA SKATING RINK	8/2/94	Closed
2-0010927	34 MASSACHUSETTS AVE	NASHOBA VLY OLYMPIA	9/22/95	Closed
2-0010986	SWANSON RD	MHD FACILITY 30	11/3/95	Closed
2-0011582	871 MA AVE	871 MA AVE	1/24/97	Closed
2-0011738	1425 MA AVE	EXXON STA	5/27/97	Closed
2-0012292	RTE 495	OFF RAMP EXIT 28	7/9/98	Closed
2-0012431	SWANSON RD	MHD FACILITY 30	9/30/98	Closed
2-0013186	RTE 495	RTE 495 S @ EXIT 28	3/7/00	Closed
2-0013306	LITTLETON COUNTY RD	MAP 4 LOT 173.17A	5/22/00	Open
2-0013332	MASSACHUSETTS AVE	ROADWAY RELEASE	6/16/00	Closed
2-0013382	81 CUNNINGHAM RD	NEW BLUE HILLS SAUGUS REALTY TRUST	6/30/00	Open
2-0013430	60 CODMAN HILL RD	ENNOVATE INC	8/14/00	Closed
2-0013496	RTE 495	RTE 495 S	9/26/00	Open
2-0013716	1425 MASSACHUSETTS AVE	EXXON STA	3/9/2001	Closed
2-0013743	1146 MASSACHUSETTS AVE	JF LOMMA TRUCKING INC	3/22/01	Closed
2-0013783	1425 MASSACHUSETTS AVE	FMR EXXON STA	4/16/01	Open

\* Closed = Cleaned-up to safe background levels. Open = further action required.

Source: DEP Bureau of Waste Site Cleanup Site/Reportable Releases Database, August 1, 2001

There are no known major point (pipe) discharges of pollutants in Boxborough. All of the problems and threats stem from so called “non-point source” pollution. Such pollution comes in small increments from many human activities. As development of the town



proceeds such sources multiply and management becomes more challenging. It is impossible to identify a particular source. Rather, a wide range of contributors need to change their ways; a result difficult to achieve in practice.

As of 1992, Beaver Brook west of I-495 failed to meet its Federal Clean Water Act target of Class B (fishable-swimable). The Massachusetts DEP attributes the contamination to non point sources of pollution. There is no comparable data available for the other five brooks. DEP does not test this far up into the Assabet River Watershed.

Urban run-off from road and parking lots are one source of non-point pollutants. Stormwater running across paved surfaces transports contaminants from automobile usage, atmospheric fallout, and road maintenance practices. The Planning Board requires the use of detention/retention basins and other mechanisms to attenuate storm water pollutants.

Failure of septic systems allows the spread of disease organisms and hence directly threatens public health. It further contaminates surface water with nutrients and all other constituents of the waste water, e.g., detergents. The Board of Health requires repair of any failed septic system that is brought to their attention. The problem lies in the unknown length of time before a failed system is tended to. Boxborough has no requirement for regular inspection or pumping, therefore maintenance is entirely the responsibility of the property owner.

Properly maintained and functioning septic systems, while effective in preventing the spread of pathogens, breaking down many complex molecules and largely digesting solids, do not remove everything from the wastewater. Dissolved constituents travel and percolate into the ground with the exiting water. Some constituents of the effluent then bind to soil particles. Very soluble constituents, however, continue to migrate, enter into the groundwater and move on with it. Nitrate, for example, is an unavoidable constituent of septic effluent. The nitrate level of effluent exceeds the level safe in drinking water. The effluent is diluted when it reaches and mixes with the groundwater. This requirement for dilution limits the amount of effluent that can be incorporated into the groundwater without the groundwater itself becoming unsafe to drink. The concentration of nitrate in septic discharge is relatively predictable. Unfortunately, the groundwater dilution is more difficult to quantify. The only easily controllable factor is the amount of effluent going into the ground. Other sources of recharge to groundwater can be controlled to some extent. Maintaining maximal recharge with water of good quality is necessary to avoid the build up of unhealthy concentration of nitrates.

Iron and Manganese are found in Boxborough's surface and groundwater in some locations. These minerals pose no hazard to health at the levels found but they do cause staining. They come from the underlying geology and they are naturally present.

The major source of sodium in Boxborough's water is salt spread on the roads. Septic systems also contribute sodium, especially if sodium compounds like washing soda are used extensively as laundry water softeners. High sodium levels have been found at various times in the surface and groundwater in several places in town, in Elizabeth Brook near the Mass

DPW depot and in Beaver Brook near I-495 near Route 111. The sodium content of the water at Blanchard Memorial School in years past exceeded the standards of drinking water, requiring the posting of a notice in the building. Fortunately, sodium is highly soluble and flushes away if the excessive source is removed. In the Fall of 2001, a new bedrock well was created for Blanchard Memorial School. This well was designed to accommodate the school, the Fire Department, the Police Department and the DPW buildings. This well replaced an existing well that had elevated nitrate levels.

Transportation corridors are one potential threat for hazardous waste spills. Interstate 495, Route 2 and the B&M railroad carry hazardous materials shipments regularly. The local fire department does have a responsibility to respond if a spill occurs.

Monitoring wells have been required by town boards and installed at some commercially developed sites. Boxborough has contracted with Littleton's Water department to have water samples periodically taken from the monitoring wells and analyzed for contaminants. No major problems have turned up. However, cases of minor contaminants have repeatedly occurred. The contamination incidents have fallen into two categories. In one type a minor amount of hazardous solvent appears to have been improperly disposed of down a drain. In another type hazardous chemicals, typically found in cleaning products, were discovered. Both types of contamination appear to be the result of lack of education.

Underground storage tanks of concern are for fuel storage and were commonly installed in the 1960's before records were kept. Most have already been removed. Boxborough's Fire Chief estimates that 90% of the residential tanks have been removed. The Chief becomes aware of the tanks as he performs burner inspections. Banks are requiring removal when properties change hands. There are five sites where larger tanks remain. These are tested as required by the Fire Chief. The only current problem is at the Mass DPW site on Swanson Road where one tank recently tested was found to be leaking. The Fire Chief is working with DEP and DPW to get the tank replaced and the spill cleaned up.

Used motor oil, paint and finishes, brush cleaning solvents, nail polish and remover, lawn and garden fertilizers, herbicides and pesticides are among products used by the town's residents which can become serious contaminants if disposed of improperly. Pet feces and animal manures in concentration significantly greater than found in nature are associated with households. These are potential non-point sources of nitrate and coliform laden run-off.

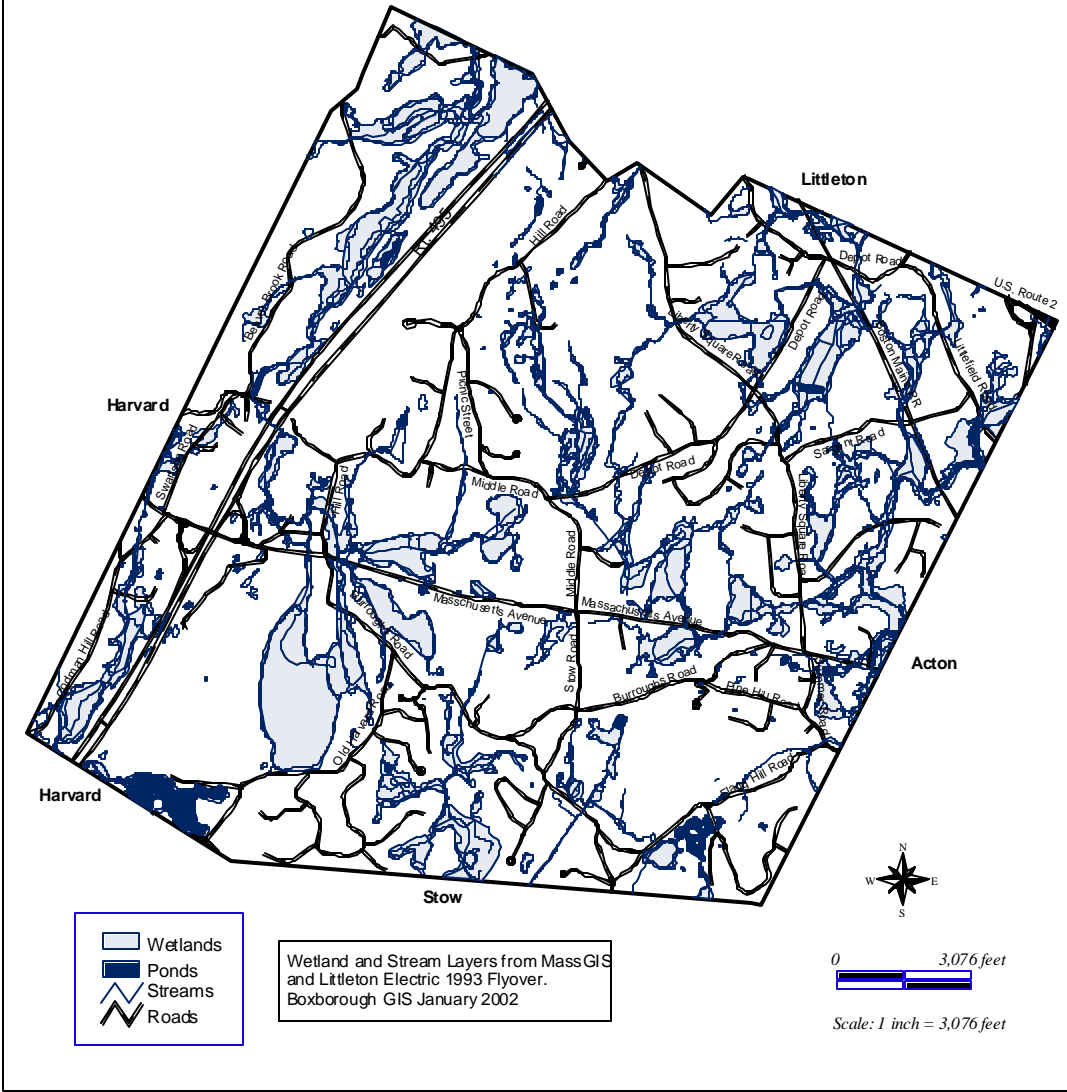
Before Boxborough acquired land for a town dump many businesses and households disposed of their trash on their own properties. The locations of these disposal areas are not recorded nor is there any data on their contents. There is also no evidence at present that any such site is causing any significant concentration of contamination.

The Boxborough Board of Health has had monitoring wells installed around the landfill. The Littleton Water Department periodically draws samples and analyzes the water. So far no trouble has been detected.

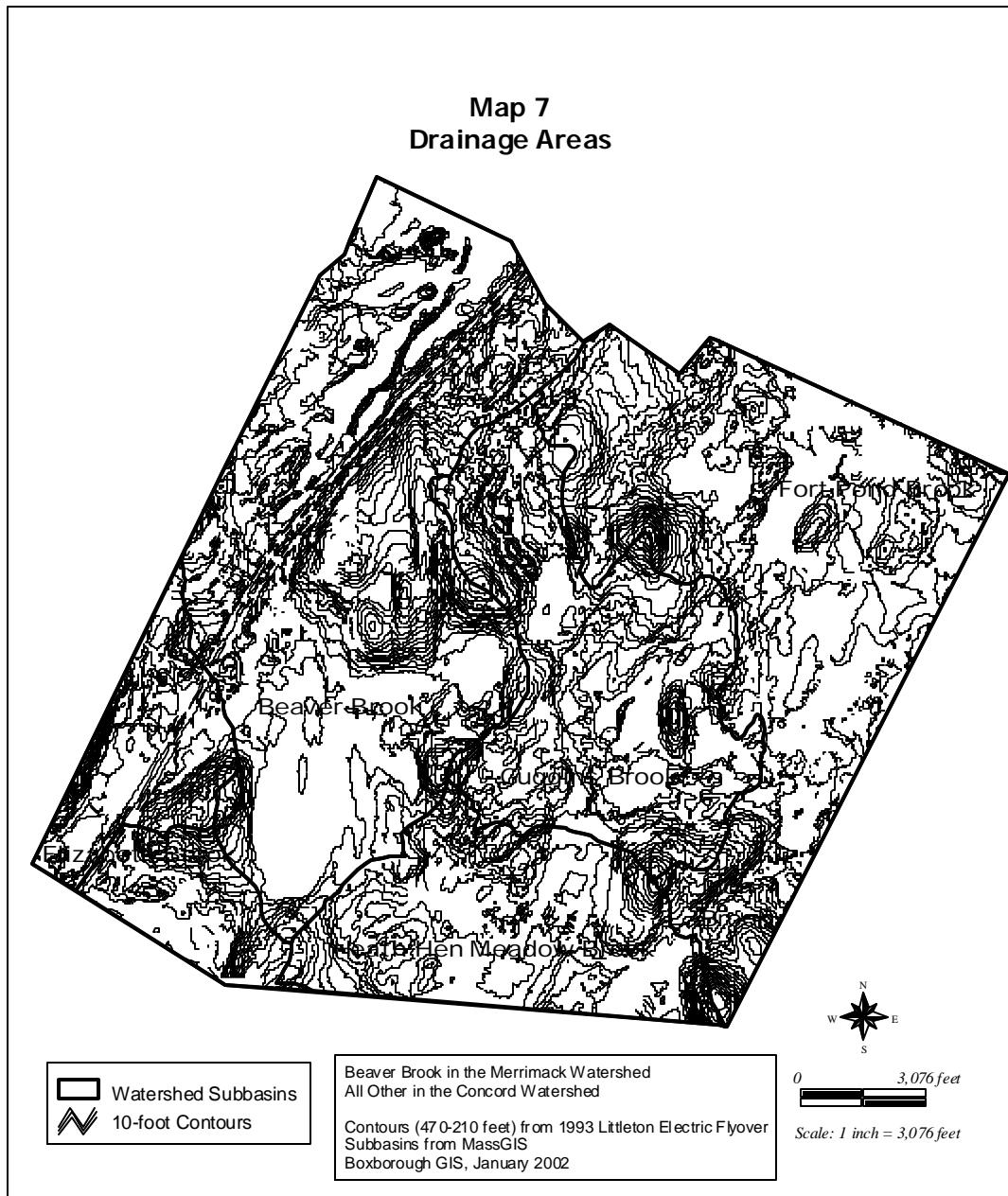
The possible sources of contamination are many and will only increase with an increasing population. It is vital that we monitor and protect the quality of our water. This should include our surface water, the water supply in bedrock areas, and the water supply in aquifers because all three are interconnected. A threat to any one is a threat to our drinking water. Monitoring and prompt action to deal with problems while below serious levels is our least expensive option.

# MAP 6 Wetlands and Streams

Map 6  
Boxborough Wetlands, Ponds and Streams



## MAP 7 Drainage Areas



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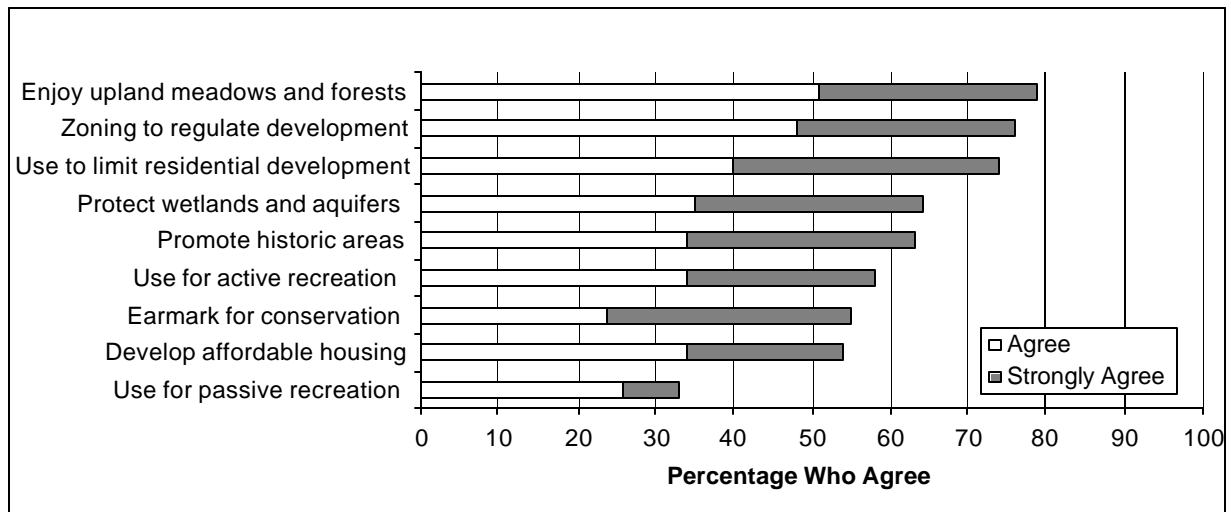
## SECTION 5 - INVENTORY OF CONSERVATION AND RECREATION LAND

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### INTRODUCTION

As the population in Massachusetts continues to rise and more and more vacant land is developed, communities are realizing that the loss of open space cannot be easily recovered. Many communities have discovered the value of open space through its loss to development. The 2000 Boxborough Town Survey (Figure 5) placed protection of wooded upland, meadows and fields, protection of aquifer recharge areas, protection of wetlands and vernal pools, and active recreation space among the highest priority of uses for land acquisition. Subsequent discussions with the Steering Committee and Boxborough community have identified the loss of open space as a major concern.

FIGURE 5: 2000 BOXBOROUGH TOWN SURVEY – LAND ACQUISITION.

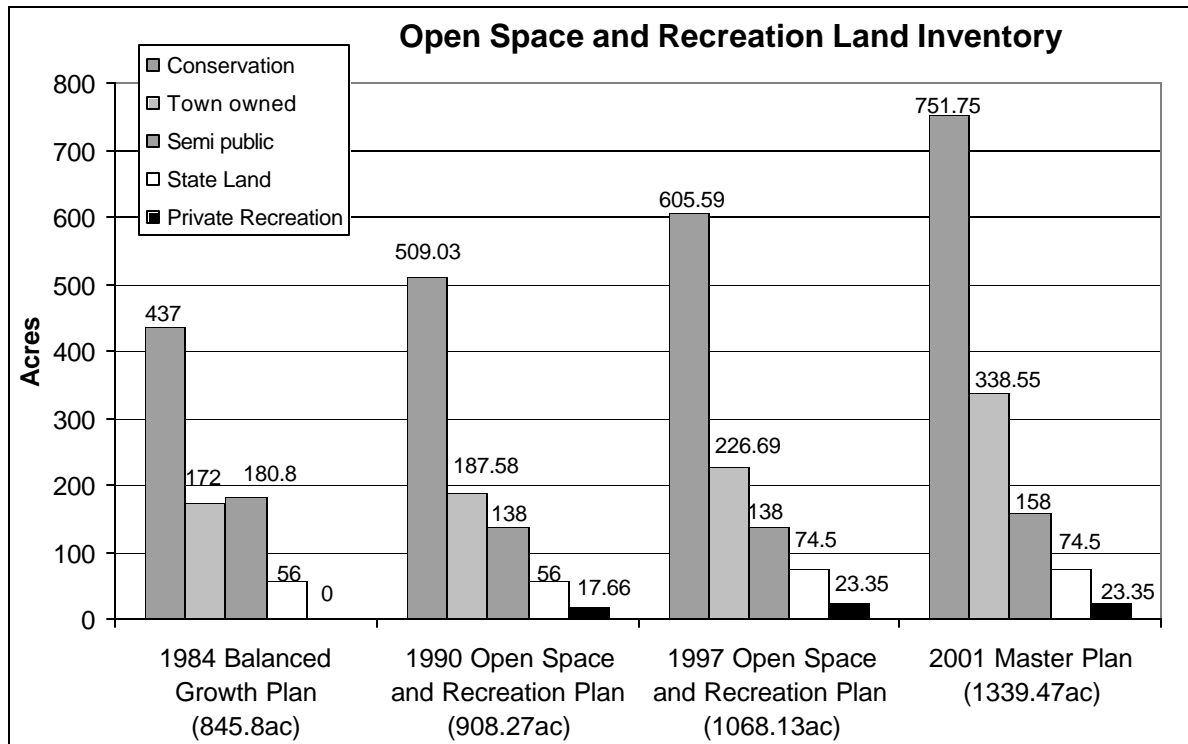


### OPEN SPACE

Open space refers to a mixture of public, semi-public and private lands with varying levels of protection. Boxborough residents have historically valued the town's rural character, community spirit, and low density. Residents are concerned about protecting the water supply and other natural resources as well as the loss of open space to development. Open space is undeveloped land that contributes to these values. For example, open space offers the least threat to water quality and many plants in vegetated wetlands help filter out sedimentation and pollutants from adjacent developments that may degrade water quality.

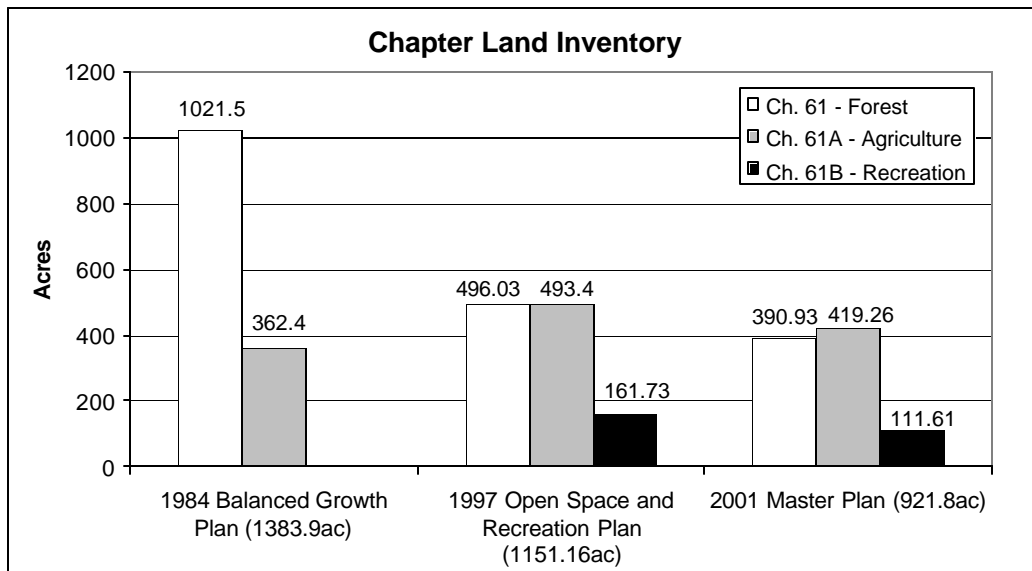
Undeveloped open spaces also contribute to the rural feeling of the town and provide areas for community gatherings and recreation. These lands provide habitat to many animal and bird species and provide scenic vistas and visual relief from the developed landscape. Without open spaces these important functions could be lost. While not all development is undesirable, it is important to strike a balance between development and open space preservation. Figure 6 shows the total acreage of open space reported today and in previous Boxborough planning documents. Boxborough acquired over 350 acres of additional open space during the 1990s. Figure 7 shows the total acreage of land designated under Massachusetts General Law (MGL) Chapters 61, 61A, and 61B (Chapter land<sup>3</sup>) reported in Boxborough planning documents. While the total acreage of other open space has risen over time, the number of acres designated as Chapter land has decreased over time. However, the total acreage of open space and chapter lands combined has remained relatively constant over this same period varying only a few acres from 2229.7 acres reported in 1984 to 2219.29 acres reported in 1990 to 2261.27 acres today.

FIGURE 6: OPEN SPACE ACREAGE REPORTED IN PAST PLANNING DOCUMENTS.



<sup>3</sup> MGL Chapters 61, 61A and 61B restrict the use of land in exchange for significant reduction in taxes. These are not permanent restrictions and the property owner may sell the land to the town without tax penalty or on the market at a significant tax penalty. Chapter 61 refers to managed forest land, Chapter 61A refers to agricultural land and Chapter 61B refers to private recreation land.

FIGURE 7: CHAPTER LAND REPORTED IN PAST PLANNING DOCUMENTS.

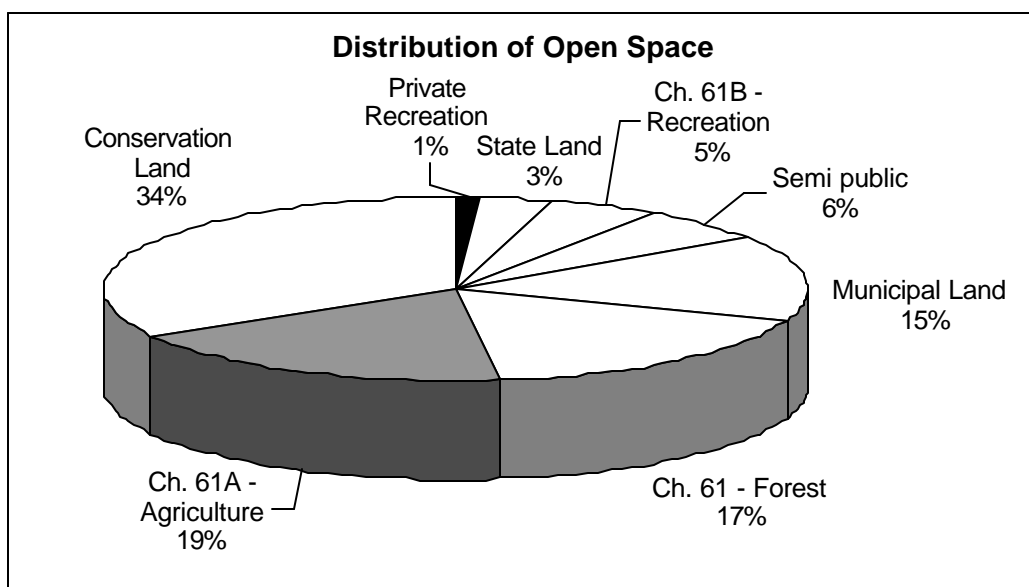


One might conclude that this is attributable to the actions of the Town of Boxborough choosing to exercise its right of first refusal and purchasing all the Chapter lands that were released. This is not the case, however. In 1999, Boxborough acquired the Hetz parcel on Liberty Square Road, thus exercising its right of first refusal for the former Chapter 61 parcel. However, the Town has not chosen, nor could it have afforded, to buy all Chapter lands that were released. Some of the open space acquired was the result of a gift and it is merely a coincidence that the acreage of open space added was roughly equal to the acreage of Chapter lands released.

There are a total of 2261.27 acres of open space in Boxborough with varying levels of protection, accounting for approximately one third of all the land in the Town. The total includes 921.8 acres of land designated under M.G.L. Chapter 61, 61A, and 61B. Without including the Chapter 61 lands, open space consists of nearly 20% (1339.47 acres) of Boxborough's total land area, approximately one-third of which is wetland. Distribution of the different types of open space is shown in Figure 8 and is further described below.



FIGURE 8: DISTRIBUTION OF OPEN SPACE.



## PROTECTED OPEN SPACE

“Protected land” falls into several categories, with varying levels of protection against future development. It is assumed that publicly owned property will be permanently protected. Publicly held land is generally held for a particular purpose and is subject to a 2/3 vote of town meeting and action by the state legislature to remove such status. Similarly, non-profit conservation organizations do not generally remove land from their portfolio of land protected from development.

Protected open space refers to lands that are protected for conservation purposes and cannot be developed. Municipal land owned by the Conservation Commission and State owned conservation lands are considered protected open space, but not all municipally owned land is considered protected as discussed in the next section. Boxborough currently has 36 parcels totaling 751.75 acres of conservation land. The 229-acre Wolf Swamp is Boxborough's largest conservation parcel. Much of it is wet and inaccessible. Thirty-six acres of the 286-acre Flagg Hill Conservation land are in the southeast corner of Boxborough with the rest located in the neighboring town of Stow. Nineteen Boxborough conservation parcels contain fewer than 16 acres; 10 are in the range of 20-38 acres and one parcel is 65 acres. Often these lands have the sense of being larger than they are when one is walking on a trail because they adjoin privately-owned land that is currently undeveloped. The protected areas are well distributed around the town, with most areas located within a quarter mile of residents. In addition to Boxborough conservation areas, the Massachusetts Division of Fisheries and Wildlife owns a single 18.5-acre parcel in the northern side of town

along the Littleton town line. The Massachusetts Department of Environmental Management has an easement on a 56-acre parcel on the southwestern end of town for flood control for the Sudbury, Assabet, and Concord Rivers. All town owned land for conservation purposes is listed in Table 15. Protected Open Space is shown on Map 8.

Semi-public lands are considered protected open space. These lands are owned by private recreation or conservation organizations that can sell them for development if they choose, but given the nature of the organization are not likely to. There are 158 acres of semi-public land in Boxborough, including the 20-acre parcel off Sargent Road owned by the Boxborough Conservation Trust. The Nature Conservancy owns the 82-acre Beaver Valley Preserve in the northwestern corner of town. The land, which is open to the public, includes a large portion of the Boxborough esker. The Harvard Sportsmen Club owns 56 acres of recreational land also in the northwestern corner of town. This land is open to members who pay a fee.

## MUNICIPAL LAND

While some town-owned land is controlled by the Conservation Commission and is therefore protected, other municipal land is owned by the Town for municipal purposes and is not considered protected open space. Boxborough has 21 parcels totaling 338.55 acres of municipal land. Municipal land includes the Blanchard Memorial School, Town Hall, the Library, the Police and Fire stations, cemeteries, and the Transfer Station as well as other undeveloped parcels. Though much of the existing municipal land in Boxborough is open, these are sites that the Town can develop for future municipal needs such as school expansion or a new recreational facility. Some of the municipal lands that are used for recreational purposes include the Steele Farm/Picnic Street Trust/Community Garden land. These lands are used for Winterfest for sledding, skating, and cross-country skiing in the winter and hiking and gardening in the summer. The Hetz Liberty Fields are on municipal land.

There are two private recreational facilities in Boxborough totaling 23.35 acres. The Nashoba Olympia Skating Rink is located just south of Route 111 near the Acton town line and the Harvard Ridge Swim and Tennis Club is located on the westerly side of Interstate 495 within the Harvard Ridge Condominiums. Both facilities are open to the public for a fee. These parcels have limited protection since they can be converted to a non-recreational use at any time in accordance with local zoning bylaws.

Table 15: Protected Open Space

Location	Area	Name	Zoning	Comments
<b>CONSERVATION LAND</b>				
3-1-170	11.05	Pettingel Park Acquired: 1963	Office Park	This land is currently accessible by foot with difficulty, through Nature Conservancy's land. Cisco land has easement for trail access
2-2-T136, T109, 2-4-109 & 1-2-133.2	207.02	Wolf Swamp Acquired: 1972	Office Park Ag-Res	A wet and wild swamp, good blueberries, trail with access off Old Harvard Road
8-6-101	10.34	Hartwell Land Acquired: 1973	Agricultural-Residential	Wildlife sanctuary, cut a cord program held here once
11-6-T309, 311, 12-6-351, 350C	38.19	Half Moon Meadow Acquired: 1975	Agricultural-Residential	Meadow with walking trail, the trail crosses a stream on an old stone bridge
12-6-261&262	1.13	Jenks Acquired: 1975	Industrial-Commercial	Strip of land between Acton and Boxborough, connects to Reed Farm II subdivision
7-5-193	16.70	Patch Hill (Atwood) Acquired: 1975	Agricultural-Residential	Trails, third highest point in Boxborough
8-5-161	64.58	Robinson Land Acquired: 1976	Agricultural-Residential	Mostly woodland, 1-10 acre field, contains part of the old carriage road, used for hiking and cross country skiing
2-3-T115	31.52	Livermore Land Acquired: 1976	Agricultural-Residential	Passive recreation, the hay fields are being mowed to prevent reversion to forest, 1 walking trail
6&10-4-244	35.43	Flerra Meadows Acquired: 1979	Agricultural-Residential	5 acres active recreation, one soccer field, ½ mile jogging trail, playground, dirt road and parking, Fifer's Festival held here
7-5-T158.2	5.17	Birchwoods Acquired: 1980	Agricultural-Residential	Contains birch stand, connects to Robinson land
12-6-182	2.53	Barker Place Acquired: 1981	Agricultural-Residential	Passive recreation, mostly wetlands, connects to other conservation land
11-6-218.1	10.82	Rubin Land Acquired: 1981	Agricultural-Residential	Passive recreation, 1 rudimentary trail
12-6-210.6	23.04	Dawson Land Acquired: 1984	Agricultural-Residential	Wildlife habitat
11-6-348&349	1.84	Sudbury Valley Acquired: 1987	Agricultural-Residential	Mostly wet, may provide future linkage

12-6-172.2	11.97	Potts Acquired: 1988	Agricultural- Residential	Some upland area, linkage between other conservation parcels
11-5-311	6.11	DiBiase Land Acquired: 1988	Agricultural- Residential	Adjacent to Hager land, Guggins Brook runs through parcel, old mill site, hemlock grove
3-3-165.2	28.11	Elizabeth White Acquired: 1989	Agricultural- Residential	Fields and woodland, hiking trail
7-5-130A	4.63	Silbury Hills Acquired: 1991	Agricultural- Residential	Located off Avebury Circle, access between lots 10 & 11
12-6-194.1-.3	35.32	Rolling Meadows Acquired: 1990	Agricultural- Residential	Open field, stream for fishing
5-2-189B	20.30	Flannery Land Acquired: 1991	Agricultural- Residential	Located within Heath Hen Meadows subdivision, mostly wet
3-3-222.2	16.19	Fisk Land Acquired: 1992	Agricultural- Residential	Trails for hiking and cross country skiing, abuts High Pasture open space
11-5-241.64	7.01	Biotti Land Acquired: 1992	Agricultural- Residential	Located within Liberty Tree Acres subdivision, mostly wet
6-3-124A	3.99	Meetinghouse Lane Acquired: 1993	Agricultural- Residential	Located in the Meeting house Lane subdivision abuts Steele Farm
5-2-170E	5.03	Sylvan Springs Acquired: 1993	Agricultural- Residential	Access through a pedestrian easement off Mayfair Drive
5-2-169.49-4	7.14	Lot 49-4 Old Harvard Estates Acquired: 1995	Agricultural- Residential	Connects to Flannery land
11-6-549	4.91	Parcel A Acquired: 1997	Agricultural- Residential	In Reed Farm II subdivision
2-3-119.A	0.41	Whitcomb land Acquired: 1997	Agricultural- Residential	Connects to Livermore land
10-11-294	36.21	Flagg Hill Land Acquired: 1998	Agricultural- Residential	Pond areas purchased as conservation land
Parcels C,D1, E and F	6.32	Lydia Lee Delano Acquired: 1998	Agricultural- Residential	In School House Lane subdivision, connects to Betty White land
5&6-2-175.6C	20.49	Flerra Estates Land	Agricultural- Residential	Land gift from Northwest Structures
1-2-118	22.07	Sudbury Valley Acquired: 1999	Office Park	Land abuts the Wolf Swamp conservation land
10-4-231.10	0.98	Deck House Lot Acquired: 1999	Agricultural- Residential	Lot donated to town by Deck House
7-5-201.2&201A	2.41	Patch Hill Road Land Acquired: 1999	Agricultural- Residential	Land abuts the Patch Hill conservation parcel
Barteau Lane/Hill Rd.	24.14	High Pastures Land Acquired:	Agricultural- Residential	Land abuts Fisk land, also Delano and Betty White land,

		1999		contains pond and fields
Delano Land	21.97	Delano Land Acquired: 10-2000	Agricultural-Residential	Land abuts Fisk land and Betty White land, gift from John P. Delano estate
12-6-185.2	6.68	Guilford Land Acquired: 2001	Agricultural-Residential	Connects to Rolling Meadows land.
Total Conservation	751.93			

<b>SEMI-PUBLIC LAND</b>				
<b>Location</b>	<b>Area</b>	<b>Name</b>	<b>Zoning</b>	<b>Comments</b>
4-1-180, 182,184,185,178,178a,174,190,176,179,169	56	Harvard Sportsmen Club	Office Park	Club is open to members who pay a fee, facility has 2 rifle ranges, 1 archery range, fishing pond and clubhouse
3-1-183,189, 193.1, 193.2	82	Beaver Valley Preserve	Office Park	Owned by the Nature Conservancy, the general public may use this land which contains much of the Boxborough Esker, the longest straight esker in Massachusetts, two guided tours per year
11&12-6-350	20	Grady land	Agricultural-Residential	Acquired by the Boxborough Conservation Trust (BCT)
<b>TOTAL SEMI-PUBLIC</b>	158			
<b>STATE LAND</b>				
1-2-103-109, 123&124	56	SUASCO Easement	Office Park	Flood control for the Sudbury, Assabet & Concord Rivers, contains Eldridge Pond
8&12-6-239.1	18.5	Berton Land	Agricultural-Residential	Purchased by the Division of Fisheries and Wildlife, contains a heronry
<b>TOTAL STATE LAND</b>	74.5			

## CHAPTER LANDS

Private open lands designated as Forest Lands (Chapter 61), Agricultural Lands (Chapter 61A), or Private Recreation (Chapter 61B) are not protected. The designation of private parcels as Chapter 61, 61A, or 61B restricts the use of land in exchange for a significant reduction in taxes. Under such a designation the land cannot be converted to residential, commercial use. There are 390.93 acres under Chapter 61 for Forest protection, 419.26 acres under Chapter 61A for Agricultural use, and 111.61 acres designated for Private Recreation under Chapter 61B totaling 921.8 acres or roughly 13% of Boxborough's total land area.

Land may be taken out of Chapter 61, 61A or 61B classification by notifying the Town and paying back taxes plus a withdrawal penalty tax. However, such land may not be sold for, or converted to, residential, commercial or industrial use while taxed under the classification without written notification to the municipality in which it is located. The Town then has 120 days to exercise its right-of-first-refusal option to purchase the land. Should this time period pass and/or the Town state in writing that it will not act on its option, the land may be developed for alternative uses, removing it from its "open" status as forest, farm, or recreation land.

Chapter 61 Forest Lands require a minimum of ten contiguous acres, which can be classified by a state forester, and require a forest management plan to be developed and implemented by the property owner. Once the application has been received and approved, the classification statement functions as a lien upon the land for taxes levied under the provisions of M.G.L. Chapter 61. The landowner must re-file every ten years or the Assessor shall remove the land from classification. Similarly, Agriculture and Private Recreation land must have a minimum of five acres to qualify, and the status must be renewed every year.

The parcels that are currently under limited tax status as forest, agricultural, or recreation lands are only minimally protected from future development and protection is only ensured if the town is able to act on its right-of-first-refusal to purchase when the property owner makes a decision to remove the M.G.L. Chapter 61, 61A or 61B "protections." Therefore, it is critical to assess the property that is currently listed under these Chapters to identify those parcels that are most likely to be subject to development pressure in the near future. The parcels should then be prioritized in terms of their interest to the Town for protection.

## PRIVATE LAND WITH CONSERVATION/AGRICULTURAL RESTRICTIONS

The town has been successful in negotiating several private conservation and agricultural restrictions. Table 16 below shows the lands that have been protected using these tools.

*Table 16: Privately Held Land With Conservation/Agricultural Restrictions*

<b>Project Name</b>	<b>Number of Acres</b>	<b>Location</b>
Culkins (Sudbury Valley Trustees)	3	Old Harvard Road
Cisco Phase 1	154	Beaver Brook Road
Cisco Phase II (proposed)	87	Beaver Brook Road
Bren Schrieber	60	80/90 Central Street
Sheehan land (agricultural)	47	Burroughs Road
Colonial Ridge	18.3	Colonial Ridge Drive

## RECREATION

Boxborough has a number of public recreation areas for both active and passive recreation. All of Boxborough's conservation lands are open to the public for passive recreation including hiking, cross country skiing, snowshoeing, picnicking, berry picking, and nature study. In 1993, the Town of Boxborough published a Conservation Land and Trail Guide, identifying the location of trails on conservation lands within the town. Additional trails and passive recreational opportunities are available on conservation lands acquired by the town since this guide was published.

Table 17 lists the recreation facilities and activities in Boxborough. All facilities are public unless otherwise noted. The Director of Public Works maintains facilities at Flerra Meadows, and will maintain the Hetz Liberty Fields when they are completed.

<i>Table 17: Recreational Facilities in Boxborough</i>	
<b>Amenity</b>	<b>Facility</b>
Playground	Blanchard Memorial School
	Flerra Meadows
Gymnasium	Blanchard Memorial School
	Acton Boxborough Regional High School (out of town limits)

<b>Amenity</b>	<b>Facility</b>
Baseball diamonds	Blanchard Memorial School (1)  Flerra Meadows (1)  Hetz* (Liberty Fields) (1)
Soccer fields	Flerra Meadows (3) 6 x 6 (2) 4 x 4  Use fields in Acton  Hetz * (Liberty Fields) (1) 11 x 11 (2) 6 x 6  Multi-purpose field at the northwest corner of the Cisco Development off Beaver Brook Road* (250' x 400')
Tennis courts	Harvard Ridge Swim and Tennis Club (2; public use for a fee)
Skating rink	Flerra (pond)  Town Square (pond)  Nashoba Olympia (public use for a fee)
Fishing pond or stream	Blanchard Memorial School  Rolling Meadows  Flerra Meadows  Guggins Brook Land  Harvard Sportsmen Club (public use for a fee)
Pool	Harvard Ridge Swim and Tennis Club (public use for a fee)  Acton Boxborough Regional High School (out of town limits)
Archery Range	Harvard Sportsmen Club (public use for a fee)
Rifle Range	Harvard Sportsmen Club (public use for a fee)

\*Facilities under construction

The Boxborough Recreation Commission also sponsors many recreational programs throughout the year for all ages. The following list is an inventory of the programs sponsored by the Recreation Commission. The Recreation Commission has seven members and is appointed by the Moderator. These programs are as follows:

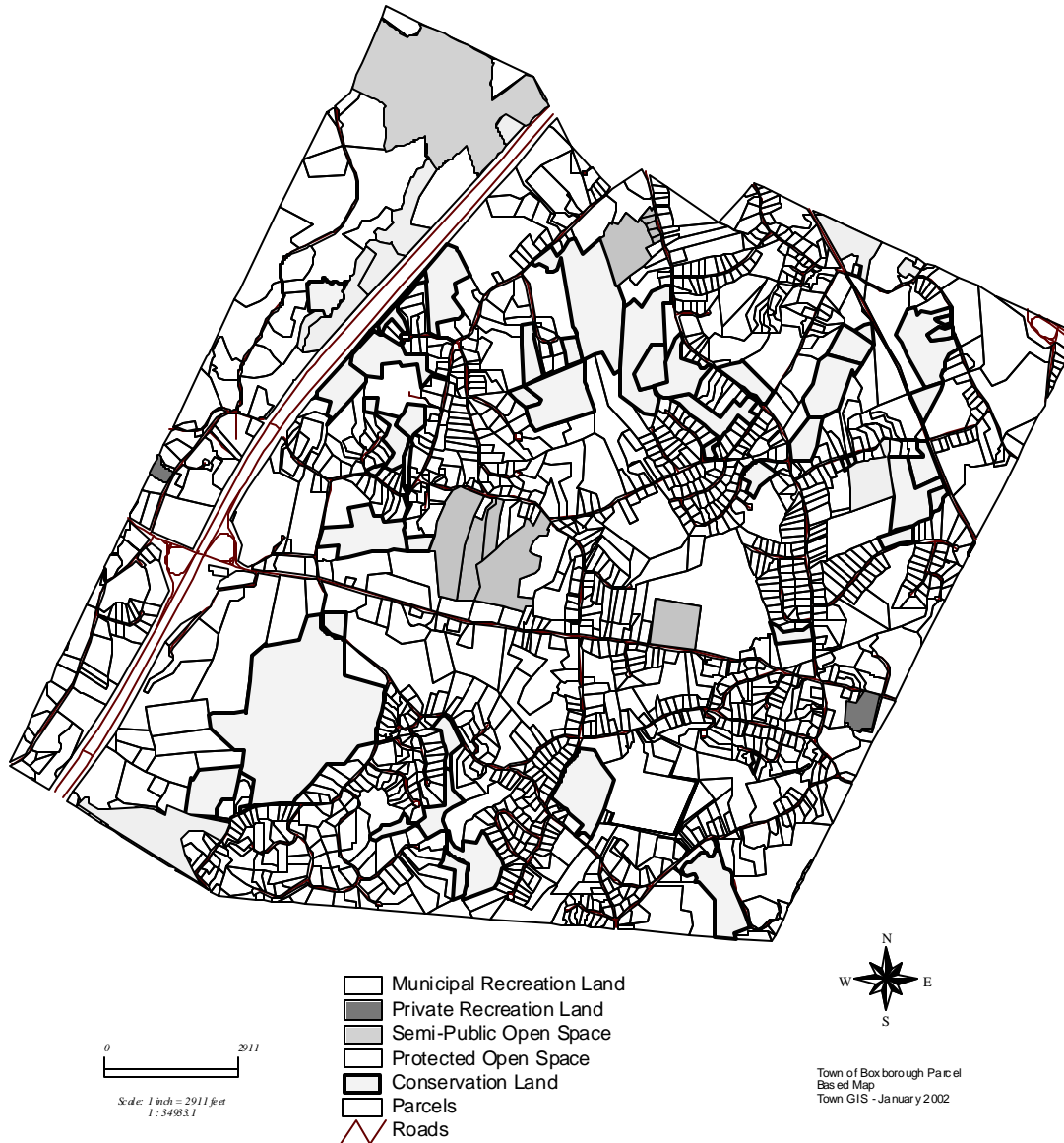


- Winter Recreation Program – Open to children kindergarten through 6<sup>th</sup> grade, this program is held on Saturday mornings from January to March offering basketball, soccer and a combination “all-sports” program.
- Gymnastics – This program is held on weekdays after school for 10 weeks from January to March. It offers elementary gymnastics instruction to children kindergarten through 2<sup>nd</sup> grade.
- K-6<sup>th</sup> Summer Playground – This program is open to elementary age children and offers organized and well-supervised games, sports, and creative activities during the mornings for the month of July at Flerra Meadows Field.
- Fifer’s Day – The Recreation Commission sponsors children’s activities, such as the three-legged race and the potato sack race, at the annual Fifer’s Day celebration.
- Men’s Basketball – The Recreation Commission sponsors a men’s basketball league during a weekday night from September to May.
- Coed Volleyball– The Recreation Commission sponsors an adult volleyball league during a weekday night from September to May.
- Winterfest – Started in 1997, Winterfest celebrates the winter season at Steele Farm. Activities include a bonfire, music, sledding, ice-skating, animal presentations, and a bake sale.
- Senior Aerobics – Classes held at Town Hall.
- Basketball Skills Drills – Open to children from grades 3 through 6. This program is held on Monday nights for 6 weeks in September/October. This program prepares the children for the Basketball games/leagues that begin in December and January.
- Basketball Skills Jump Start – Open to 1<sup>st</sup> and 2<sup>nd</sup> grade children. This program is held on Saturdays for 7 weeks from January to March. It offers beginning basic basketball skills.
- CPR and First Aid Classes – This is a joint venture with the Firemen Association. Spring and Fall classes are available to the Recreation Commission Directors also open to Boxborough residents.
- Soccer Skills Drills – Open to 1<sup>st</sup> through 3<sup>rd</sup> grade children. This program is held on Sundays for six weeks in March/April. The program offers basic soccer skills and prepares the children for the soccer leagues that begin in April.

# MAP 8 Conservation, Open Space and Recreation Land

Map 8

Conservation, Open Space, and Recreation Land



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## SECTION 6 - COMMUNITY GOALS

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Community goals were derived from several sources: input from community meetings including the Town Center Visioning, an all Boards meeting, and Master Plan community meetings; and a citizen survey prepared by the Board of Selectmen. The Recreation Commission provided information on the types of programs that they sponsor. They also prepared a list of future programs and activities. The Conservation Commission submitted information on desirable open space linkages and potential trail expansions. The State Comprehensive Outdoor and Recreation Plan (SCORP) was consulted to determine types of facilities that are needed in the northeast region. Finally, national recreation standards were reviewed to assess recreational deficiencies.

There are many physical characteristics that make Boxborough a special place. Some of these characteristics include: tree-lined streets, stone walls, woodlands and wetlands, open fields and historic buildings. These are the characteristics that the town strives to maintain at a time of continuing development pressure.

The overall goal of the Open Space and Recreation Plan is to preserve as many of the town's resources as possible by using a number of preservation techniques in concert; and to provide recreation programs for all ages and abilities.

The next five years will be especially challenging in order to have open space preservation efforts keep pace with land development. While demand for open land and recreation increases, funding sources, both state and local will be increasingly difficult to obtain. Local open space preservation depends on the continued commitment of volunteer boards and committees and an informed electorate to set policy and make decisions on open space issues.

### Open Space Goals:

1. Protect through acquisition and conservation restriction larger, less fragmented areas.

This may be accomplished by the protection of lands abutting existing conservation land. The Conservation Commission has identified the area bounded by Hill Road, Liberty Square Road, Depot Road and Middle Road as having the potential to become 200 to 300 acres of protected land. This may be Boxborough's last opportunity to acquire a conservation parcel of this size. This area consists of hickory-oak and beech upland forests with clusters of vernal pools that are rich with blue-spotted salamanders and spotted turtles, both state-listed rare species. Placing this interior land in conservation would connect six existing conservation parcels, providing an extensive trail system for passive recreation. The area is also an important water resource since it is recharge area for the Guggins Brook Drainage Basin.

2. Provide additional trails and corridors connecting the conservation parcels.

Increasing the trails and the land connections between existing parcels would benefit the public and the wildlife. The Conservation Commission will work with

landowners and developers to develop a greater connectivity throughout Boxborough.

3. Preserve Upland Habitat around Wolf Swamp and Connectivity to the Delaney Project.

Wolf Swamp (229 acres) and the state-protected Delaney Project (500 acres) are two extensive wetlands that are connected by an unprotected and currently undeveloped upland area. It is important for the wildlife that breed in and use these wetlands to have access to uplands for food and shelter and a safe corridor to move between the two wetland systems. The Conservation Commission will work with the commercial developer who owns this upland to protect a portion of it.

4. Preserve a large grassland area.

Grasslands are becoming a rare habitat in our area and they are an essential habitat for many birds. The Conservation Commission will seek permanent protection for the open fields of Steele Farm and Picnic Street Trust, where it is known that bobolink breed and raise young. The Conservation Commission will continue to maintain the pasture as grasslands as it does at Livermore (Beaver Brook Meadows), Rolling Meadows, and High Pastures. Steele Farm would be an important addition to these other meadows because of its larger acreage in pasture. Many birds like the bobolink, eastern meadowlark and savannah sparrow will only nest in grasslands over 10 acres. Steele Farm is used by migrating warblers, sparrows and larks and provides a source of prey for owls, hawks and red fox.

5. Develop and implement management plans and stewardship groups for the land under conservation protection.

This is an ongoing project with the Conservation Commission and its associate members. Management plans for six conservation parcels are almost completed. They establish baseline data regarding natural communities, wildlife, trail locations, and public usage. Short term and long-range maintenance plans will give direction to the Public Works Department and stewards.

A stewardship program for the conservation lands will provide for greater citizen involvement, more rapid response to problems, and better maintenance.

It is the hope of the Conservation Commission that the town's people will find being a steward a rewarding experience. A new trail guide will be developed through the use of GPS, GIS and the work of volunteers.

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## SECTION 7 - ANALYSIS OF NEED

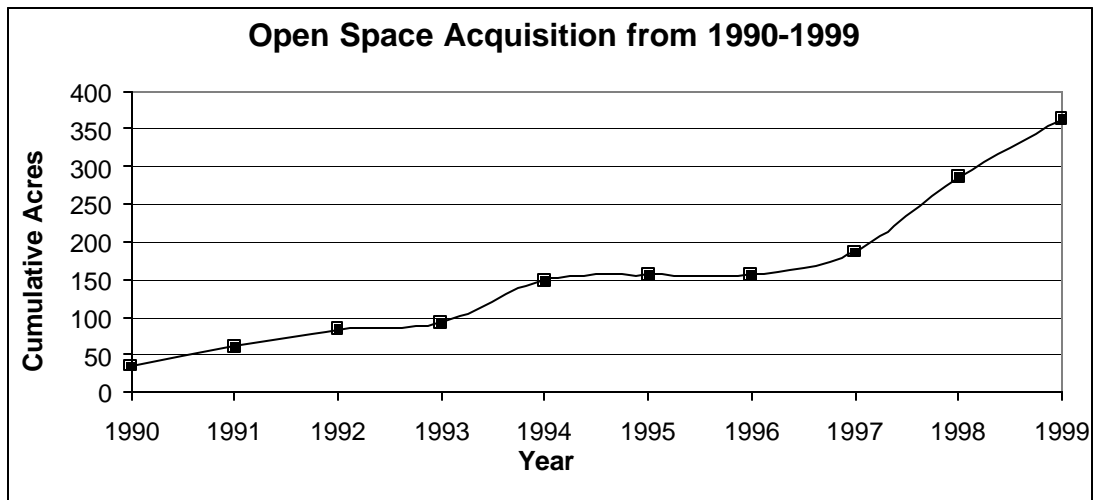
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### OPPORTUNITY AREAS AND ACQUISITION STRATEGY

Open space is the key to many of Boxborough's goals. Open space defines community character. Retaining open space by keeping development away from water supply resources and avoiding the possibility of contamination is a public health concern. Maintaining wetlands is important to water quality and flood control. Thus, when parcels of undeveloped land become available for town acquisition, it is important for the town to be able to evaluate the acquisition potential in light of community goals and public interest values.

The community has always valued its open space and has identified protection and acquisition of open space as a high priority. According to the 2000 Boxborough Town Survey, 82% of the townspeople use the conservation lands at least occasionally (and 59% thought these lands were adequate). During the 1990s, Boxborough acquired over 350 acres of open space through a combination of purchases and gifts, as shown in Figure 9.

FIGURE 9: OPEN SPACE ACQUIRED FROM 1990-1999.



The 1997 Open Space and Recreation Plan identified eight areas of town for land acquisition for open space and municipal land. Since the completion of the plan, a number of parcels have been acquired in six of these areas including Flagg Hill, Flerra Estates, Picnic Street Trust, and Sudbury Valley. To continue the trend of increasing open space in Boxborough, the Conservation Commission created a land ranking system to evaluate the existing conditions and determine areas suitable for acquisition.

Many factors are involved in determining what parcels to acquire for open space and recreation. At the community workshop on February 27, 2001 the participants were asked to assign values to a number of resource indicators. These include the protection of town character (scenic areas, historical areas, agricultural resources, and recreational areas) and the protection of natural resources (water supply and water quality, forest lands, wetlands, biological diversity, and flood storage).

There are also many factors that can be considered in the land acquisition decision-making process. These include contiguity with existing open space areas, development potential, size of parcel, recreational opportunities, accessibility, and cost to develop and maintain.

*Table 18: Public Interest Factors for Land Acquisition Strategy*

<b>Exchange Factor</b>	<b>High value</b>	<b>Medium value</b>	<b>Low value</b>
Size	Equal to or greater than 20 acres	10-20 acres	Less than 10 acres
Contiguity to another protected parcel	Abuts more than one protected parcel	Abuts one protected parcel	Isolated parcel
Road frontage for public access		Has frontage	No frontage
Environmental impact	Equal to or greater than 75% wetlands	Less than 25% wetlands	No wetlands
Flood control	Within 100 year flood zone	Within 500 year flood zone	Not within flood zone
Scenic views	Site provides distinctive landscape value or character viewable from a public way or provides a viewpoint to significant wide-angle unobstructed views	Site provides interesting landscape features that are not readily accessible. One must hike in to see views.	No scenic qualities
Historical resources	Features contain significant historical, cultural, or archaeological value	Since a historical survey has not been done, it is difficult to rank parcels. - NA	No features
Biodiversity	Listed in the Mass. Natural Heritage Atlas as having state-wide significance or provides a corridor linking other open land.	Site has local significance as a habitat	Little or no significance
Proximity to Town Center and Route 111	Within 0.5 miles of Town Center District	Site is between 0.5 and 1 mile	Site is more than 1 mile

## CONSERVATION COMMISSION AND OPEN SPACE ACQUISITION STRATEGY

Boxborough's Conservation Commission takes seriously its charter to preserve open space by bringing to Town Meeting conservation-important land acquisition proposals. Since 1997, the Conservation Commission has developed its own land ranking model to rate parcels for future acquisition as conservation land. The Conservation model does not include such factors as proximity to Town Center and Route 111. Other factors are similar, but may have slightly different titles.

Using a weighted system, the Conservation Commission model considers the following factors:

1. Linkage to other protected properties,
2. Accessibility to the public,
3. Presence of a variety of wildlife habitats,
4. Scenic value,
5. Groundwater resources,
6. Passive recreation,
7. Agricultural value,
8. Size of parcel,
9. Any other special features.

## RECREATION NEEDS

According to the 2000 Boxborough Town Survey, 73% of those surveyed use the town recreational facilities or programs at least occasionally, but only 44% found them adequate to serve their needs. The national park standards for town recreation facilities were identified in the OSRP and listed below in Table 19.

<i>Table 19: Comparison of Boxborough to National Park Standards for Town Recreation Facilities</i>			
<b>Activity</b>	<b>Standard per person</b>	<b>Existing</b>	<b>Required at build-out</b>
Hiking trails	1 mile per 4,000	5	1.75 mi.
Nature trails	1 mile per 2,500	-	2.8 mi.
Equestrian trails	1 mile per 6,250	1	1.12 mi.
Bicycle trails	1 mile per 2,000	0	3.5 mi.
Jogging trails	1 mile per 2,000	2	3.5mi.
Playgrounds and parks	1 area per 1,000	2	7 areas
Picnic tables	1 table per 300	10	23 tables
Tennis courts	1 court per 1,500	2	4-5 courts
Basketball courts	1 court per 1,000	1	7 courts
Volleyball courts	1 court per 3,000	0	2 courts

<b>Activity</b>	<b>Standard per person</b>	<b>Existing</b>	<b>Required at build-out</b>
Horseshoe pits	1 pit per 2,000	0	2-3 courts
Baseball diamond	1 per 3,000	3	2
Softball diamond	1 per 3,000	1	2
Soccer fields	1 per 4,000	3	2
Golf course	18 holes per 125,000	0	NA
Swimming area	1 sf per person	1	1

Source: National Park Service as printed in the 1997 Town of Boxborough Open Space and Recreation Plan

According to these standards, based on existing facilities and a population of nearly 5,000 residents, Boxborough needs bicycle trails, 2-3 additional playgrounds, picnic facilities, 2 tennis courts, 3 basketball courts, 2 shuffleboard courts, 2 horseshoe pits, and a swimming area. Recreational needs identified in the 2000 Town Survey differed slightly from these standards and included bike paths, field space, swimming pool/pond, cross-country ski trails, and bike paths. These needs were consistent with those identified by the community during the OSRP process.

Some additional athletic facilities are planned in Boxborough. A multi-purpose athletic field (250' by 400') with accessory parking has been built off Beaver Brook Road in northwest corner of Cisco Development Partners, LLC – NEDC Site 2. The field has been seeded and should be usable by spring 2003. As part of the Tax Increment Financing Agreement, dated June 26, 2000, between Cisco Development Partners, LLC and the Town of Boxborough, it is anticipated that ownership of the 10 acre parcel including the field and parking will be transferred to the town. The Town of Boxborough is also constructing three additional soccer fields and a baseball diamond named Liberty Fields on the Hetz land. At the Annual Town Meeting in May 2001, a vote of 86 to 14 approved the anticipated \$588,000 cost of building the badly needed fields. It is expected that the fields will be ready for use in spring 2003.

## SUMMARY OF RESOURCE PROTECTION NEEDS

The most critical resource protection need is the preservation of the town's water resources. Because Boxborough is completely dependent on private wells and sewage disposal systems, residents place great importance on the preservation of water resources. During the Master Plan Workshop, residents ranked water resources and aquifers as the town's most important resource. This is not surprising given the fact that Boxborough does not have public water or town sewer system. Other important resources that were identified are wildlife habitat; and ponds and wetlands; forest lands, agricultural lands and scenic and historic sites. The workshop also revealed that residents were willing to pay for the protection of town resources.

## SUMMARY OF COMMUNITY NEEDS



Town-wide conservation and recreation needs were determined by reviewing the demographic profile, analyzing results of community forums, and comparing existing facilities and land with state and national standards. Recreation programs are needed for all groups in Boxborough: children, adults and senior citizens. Based on recent town meeting appropriations, it appears that people are willing to pay for additional land and facilities.

The national standards for town recreation facilities are exhibited in Table 19. These standards provide a guide for future recreational facility development. According to these standards, Boxborough needs the following facilities: bicycle and equestrian trails; 2 playgrounds, 10 picnic tables, 2 tennis courts, 3 basketball courts, 1 shuffleboard court, 1 horseshoe pit, and a swimming area.

According to the SCORP Plan, there are deficiencies in the northeast region for the following facilities and activities: tennis, golf, field based activities, hiking, cross-country skiing, picnicking and boating.

## MANAGEMENT NEEDS

Existing conservation and municipal lands are currently maintained by the Director of Public Works. Recently, the Director of Public Works (DPW's) job description has been updated to include maintenance of town owned land. In the past several years, the Conservation Commission has had members of the Boxborough Conservation Trust (BCT) and Boy Scouts help create and maintain trails on town and conservation land. In January 2002, the Conservation Commission implemented a Stewardship Program to help maintain Conservation Land. In addition, the Conservation Commission has created land management plans for the following Conservation lands: Flagg Hill, Rolling Meadows, Robinson/Birchwoods, Livermore, Hamilton/Delano, and Flerra Meadows. On March 23, 2001, the Conservation Commission filed New Regulations for Boxborough Conservation Land with the Town Clerk.

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## SECTION 8 - GOALS AND OBJECTIVES

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### CONCLUSION AND RECOMMENDATIONS

The residents of Boxborough value open space and the town acquired over 350 acres of open space during the 1990s. The protection of open land is one of the key actions that the town can take to achieving the goal of retaining town character. The major issues relating to open space and recreation are open space preservation and acquisition and increasing open space accessibility and recreational facilities to meet the needs of the growing population. Actions that the town should concentrate on for acquisition and preservation include prioritizing chapter lands for acquisition, collecting funds for acquisition, and educating the public about the tax benefits of Chapter 61, 61A, 61B, Agricultural Preservation and

Conservation Restrictions. The Open Space Acquisition Strategy or the Conservation Commission's Land Ranking Model should be used in this effort. Other items relating to preservation and maintenance of open space include sponsoring clean-up days or conservation land adoption programs that connect the community to the conservation lands, thereby increasing public awareness of and responsibility for open space.

Actions relative to accessibility and recreational facilities include evaluating recreational needs based on population and demographics and developing additional facilities to meet existing and future needs. Another important action item is to update the Conservation Land and Trail Guide and to develop connections between existing conservation lands. Map 9 shows suggested parcels for conservation land acquisition in the next five years.

The Goals and Objectives for the Conservation and Recreation Plan are established below. After each objective, the agency responsible for implementation is identified. In some cases more than one board or commission will perform the specified task. Since each town agency is endorsing this plan, it is important to identify the board or commission responsible for implementing each goal.

#### GENERAL GOALS:

- To protect and to conserve Boxborough's natural resources for present and future generations;
- To provide a diverse system of open space areas; and
- To provide quality recreation programs for all residents and future residents of Boxborough.

#### GOAL

1. To protect the water resources of the Town.

#### OBJECTIVES:

- a. To sponsor adequate hazardous waste days. (Board of Selectmen and Board of Health)
- b. To coordinate the Boards and Commissions having the responsibility of protecting water resources and to define each Board's and Commission's jurisdiction. (Board of Selectmen, Conservation Commission, Board of Appeals, Planning Board and Board of Health)
- c. To continually assess land use controls in aquifer, aquifer recharge and wetlands areas to determine if they will ensure water quality protection. (Planning Board, Board of Health and Conservation Commission)
- d. To establish and coordinate policies for working within the vegetated wetlands buffer and the "Wetlands and Watershed Protection" buffer districts. (Conservation Commission, Board of Appeals and Board of Health)
- e. To continue and expand the groundwater monitoring program. (Planning Board and Board of Health)

- f. To educate residents about how their wells and septic systems function, and how to properly maintain these systems. (Board of Health and Conservation Commission)
- g. To keep a record of failed septic systems and well water quality problems and to map areas with problems to determine if there are any patterns. (Board of Health)
- h. To analyze the Town's potential water sources that could be developed into a town water supply. (Board of Health, Water Resources)

GOAL:

- 2. To acquire additional land for Conservation and Recreation purposes.

OBJECTIVES:

- a. To make townspeople aware of the Conservation Commission's Trust Fund and encourage residents to contribute to this fund. (Conservation Commission)
- b. To identify key land parcels and develop acquisition plans for these parcels. (Board of Selectmen, Conservation Commission and Planning Board)
- c. To keep an active log of all land under Chapter 61, Chapter 61A and Chapter 61B and when the plan expires. (Assessor)
- d. To make recommendations to the Selectmen on land offered to the Town for first refusal under Chapters 61, 61A and 61B. (Conservation Commission, Recreation Commission and Planning Board)
- e. To identify small neighborhood open space areas within residential subdivisions to set aside lots under Section 81U. (Planning Board and Recreation Commission)
- f. To encourage developers of residential, commercial and industrial properties to include recreation facilities and open space in their developments and to provide linkages to existing Conservation and or recreation properties. (Planning Board, Conservation Commission and Recreation Commission)
- g. To explore alternatives for funding open space acquisition including government funding, private foundations and land gifts. (Conservation Commission and Planning Board)
- h. To compile a list of all town-owned land and list the types of uses that could be developed on these parcels. (Board of Selectmen, Conservation Commission, Recreation Commission and Planning Board)

GOAL:

- 3. Provide additional trails and corridors to connect conservation parcels for both human and wildlife access.

OBJECTIVES:

- a. Map areas that could be connected through additional trail or land acquisition. (Conservation Commission)
- b. Target parcel acquisition to provide for trail and land linkage. (Conservation Commission)

GOAL:

4. Preserve a large grassland area.

OBJECTIVE:

- a. Designate the open fields in Steele Farm municipal land as Conservation land. (Board of Selectmen and Conservation Commission)

GOAL:

5. Preserve upland habitat around Wolf Swamp.

OBJECTIVE:

- a. Assure that at least a portion of the upland which abuts Wolf Swamp be preserved and protected to provide habitat needed by animals that breed or live in the wetlands. (Board of Selectmen, Conservation Commission and Planning Board.

GOAL:

6. Acquire and protect a large upland area.

OBJECTIVES:

- a. Identify a large, unfragmented upland area which has a number of natural communities with a variety of plant and animal species. (Conservation Commission)
- b. Present an article at a future town meeting for the town to acquire this land. (Conservation Commission)

GOAL:

7. To protect the town's heritage and character through the preservation of scenic areas, roadways, and historic buildings and landscape features.

OBJECTIVES:

- a. To identify and map the town's historic resources. (Historic Commission)
- b. To use creative zoning to protect unique features and to provide larger tracts of open space. (Planning Board)
- c. To incorporate privately owned old roads into the town trail system. (Planning Board and Conservation Commission)
- d. To acquire open fields which can be viewed from existing public roads and provide for their management to remain open. (Conservation Commission and Director of Public Works)
- e. Identify scenic viewpoints and use building envelopes and creative zoning to preserve viewsheds, significant vegetation and stone walls. (Planning Board and Conservation Commission)

GOAL:

8. To enhance the quality and variety of recreation programs and to provide facilities to meet current and future demands.

OBJECTIVES:

- a. To assess the current feasibility of creating a town swimming area. (Recreation Commission)
- b. To develop a trail system which will provide access to and will interconnect conservation and municipal lands. The system will include hiking, bicycling, bridle, and cross country skiing trails but shall disallow motorized vehicles. (Board of Selectmen, Conservation Commission, Recreation Commission and Planning Board)
- c. To oversee the development of the land donated to the town in the Town Center District. (Selectmen, Planning Board, Conservation Commission and Recreation Commission)
- e. To continue existing recreation programs and to expand programs at least keeping pace with population growth. (Recreation Commission)

GOAL:

9. To nurture and preserve wildlife and wildlife habitat.

OBJECTIVES:

- a. To acquire or otherwise protect land with rare or endangered wildlife species. (Conservation Commission)
- b. To protect parcels or provide conservation easements between upland and wetland parcels to provide for migration of wildlife. (Conservation Commission and Planning Board)
- c. To improve habitat by appropriate thinning, planting, or removal of invasives. (Conservation Commission)
- d. To maintain some areas in a natural condition. (Conservation Commission)

GOAL:

10. To promote education of townspeople in environmental and conservation issues.

OBJECTIVES:

- a. To acquire for the town library periodicals and books concerning the environment. (Library and Conservation Commission)
- b. To sponsor walks and guides of existing Conservation lands. (Conservation Commission)
- c. To sponsor films, speakers, nature walks etc. relating to the environment. (Conservation Commission)
- d. To publish and distribute in the Town information on recreation programs and conservation land and trails. (Conservation Commission and Recreation Commission)
- e. To create interpretive trails describing unique landscape features, geology, and vegetation. (Conservation Commission)
- f. Film nature walks and broadcast on the local cable access channel. (Conservation Commission and Information Technology)

GOAL:

11. To preserve farmland, prime agricultural soils, and to encourage agricultural land uses.

OBJECTIVES:

- a. To encourage residents to put land under Chapters 61, 61A and 61B Forest, Agricultural and Recreational Preferential Taxation. (Conservation Commission)
- b. To assess the need for expansion of the community gardens program in other sections of town, and if needed expand the community gardens program. (Recreation Commission)
- c. To use creative zoning to preserve agricultural lands. (Planning Board)
- d. To explore the possibility of leasing Conservation land for agricultural purposes. (Conservation Commission)

GOAL:

12. To develop and carry out a maintenance plan for each parcel of land under conservation protection.

OBJECTIVES

- a. To establish a management/maintenance plan for existing conservation lands. (Conservation Commission)
- b. To encourage volunteer groups, e.g. scouts to help create and maintain trails. (Conservation Commission)
- c. To include money in the annual budget for property maintenance. (Conservation Commission)

GOAL:

13. To encourage citizen participation in open space and recreation planning.

OBJECTIVES:

- a. To assess community attitudes towards open space and recreation and to determine what people are willing to pay for land acquisition. (Conservation Commission and Planning Board)
- b. To hold workshops and public meetings concerning planning and open space and recreation issues. (Planning Board, Recreation Commission and Conservation Commission)

GOAL:

14. To enforce existing regulations. (Planning Board, Conservation Commission, Board of Appeals and Building Inspector)

OBJECTIVES:

- a. To use the Non-criminal Dispositions By-law to issue fines to zoning violators. (Building Inspector)
- b. To lobby for adequate budgets for enforcement of regulations. (All)

GOAL:

15. To educate the public of the financial impacts, both long and short term, of acquiring land for open space and recreational purposes. (Finance Committee)

GOAL:

16. To coordinate open space planning efforts with neighboring communities to create a regional open space and trail network.

OBJECTIVES:

- a. Consult with the Conservation Commissions of abutting communities to determine where existing conservation land is located. (Conservation Commission and Planning Board)
- b. Meet with abutting communities to determine where conservation land and trails can be connected. (Conservation Commission and Planning Board)

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## **SECTION 9 - FIVE YEAR ACTION PLAN**

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The planning for a future swimming/skating pond, expanding and linking of the town trail system, planning for a comprehensive town-wide bike path and trail system, and acquiring additional conservation land are all actions the town hopes to achieve in the five years. The five-year action plan is presented below and shown on Map 9.

### **YEAR ONE (2002)**

ACTION ITEM: To create acquisition and/or land management strategies for parcels identified as open space priorities.

BOARD: Board of Selectmen, Conservation Commission, Recreation Commission and Planning Board

SCHEDULE: June 2002

ACTION ITEM: To identify a large, unfragmented upland area which has a number of natural communities with a variety of plant and animal species both common and rare and present such land acquisition at the May Annual Town Meeting.

BOARD: Conservation Commission

SCHEDULE: May 2002

ACTION ITEM: Update Buffer Zone Regulations to the Wetland Bylaw

BOARD: Conservation Commission

SCHEDULE: January 2002

ACTION ITEM: Update the Conservation Land and Trail Guide on the GIS System.

BOARD: Conservation Commission, Planning Board, and GIS Coordinator.

SCHEDULE: December 2002

ACTION ITEM: Support the Water Resources Team in follow up water supply studies.  
BOARD: Board of Selectmen, Conservation Commission, Board of Appeals, Planning Board and Board of Health  
SCHEDULE: March 2002

ACTION ITEM: To create a Chapter 61 and 61A data base including parcels, acreage, owners, renewal dates, dates of expiration, and acquisition ranking.  
BOARD: Board of Selectmen, Assessor, Planning Board and Conservation Commission  
SCHEDULE: April 2002

ACTION ITEM: Create a data base and map of failed septic systems and locations on the GIS system  
BOARD: Board of Health, GIS Coordinator  
SCHEDULE: December 2002

ACTION ITEM: Prepare a town recreation program brochure  
BOARD: Recreation Commission  
SCHEDULE: July 2002

ACTION ITEM: To complete a town-owned land data base on the GIS system including parcel location, use restrictions and available facilities.  
BOARD: Selectmen, Planning Board and GIS Coordinator  
SCHEDULE: July 2002

ACTION ITEM: To secure permanent equipment storage facility within the designated recreation area of Flerra Meadows.  
BOARD: Recreation Commission  
SCHEDULE: October 2002

ACTION ITEM: To assess existing undeveloped or underdeveloped properties for their recreational and open space value, using both the resource sensitivity analysis and the Conservation land ranking model.  
BOARD: Selectmen, Conservation Commission, Recreation Commission and Planning Board  
SCHEDULE: December 2002

#### YEAR TWO (2003)

ACTION ITEM: Update wetland maps on the GIS system.  
BOARD: Conservation Commission and GIS Coordinator  
SCHEDULE: August 2003

ACTION ITEM: Identify potential sites for a swimming and skating area  
BOARD: Recreation Commission and Selectmen  
SCHEDULE: November 2003



ACTION ITEM: Oversee the consultant's report on the town's historic resources consistent with Massachusetts Historical Commission requirements and Register Historic properties with Massachusetts Historical Commission

BOARD: Boxborough Historical Commission

SCHEDULE: March 2003

ACTION ITEM: Schedule meetings with Conservation Commissions of abutting towns (Acton, Harvard, Littleton and Stow) to determine where existing conservation land is located and where linkages can be provided

BOARD: Conservation Commission

SCHEDULE: January 2003

ACTION ITEM: Prepare management plans for 6 additional conservation lands

BOARD: Conservation Commission

SCHEDULE: March 2003

ACTION ITEM: To create a plan for a Massachusetts Avenue (Route 111) multi-purpose trail system.

BOARD: Recreation Commission and Planning Board

SCHEDULE: March 2003

ACTION ITEM: To locate potential sites for tennis and basketball courts.

BOARD: Recreation Commission

SCHEDULE: April 2003

ACTION ITEM: To propose a Flexible Development or Open Space Residential Bylaw.

BOARD: Planning Board

SCHEDULE: May 2003

ACTION ITEM: Establish a policy on leasing Conservation land for agricultural purposes

BOARD: Conservation Commission

SCHEDULE: July 2003

#### YEAR THREE (2004)

ACTION ITEM: To acquire a minimum of ten (10) acres of grassland upland adjacent to an existing conservation area.

BOARD: Conservation Commission

SCHEDULE: July 2004

ACTION ITEM: Create (1) one mile of interpretive trails describing unique landscape features

BOARD: Conservation Commission

SCHEDULE: September 2004

ACTION ITEM: To set aside grassland portion of Steele Farm for conservation purposes.  
BOARD: Board of Selectmen and Conservation Commission  
SCHEDULE: May 2004

#### YEAR FOUR (2005)

ACTION ITEM: To preserve at least a portion of the upland area adjacent to Wolf Swamp and the Delaney project  
BOARD: Conservation Commission  
SCHEDULE: August 2005

ACTION ITEM: Inventory wildlife habitats or rare and endangered species and develop a plan to protect them.  
BOARD: Conservation Commission  
SCHEDULE: August 2005

ACTION ITEM: To establish five (5) more miles of bike trails.  
BOARD: Recreation Commission and Planning Board  
SCHEDULE: June 2005

ACTION ITEM: To create a minimum of one (1) mile of hiking trails.  
BOARD: Conservation Commission  
SCHEDULE: November 2005

#### YEAR FIVE (2006)

ACTION ITEM: To assess the need to expand the Community Garden Program and to expand the program if the need exists.  
BOARD: Recreation Commission  
SCHEDULE: May 2006

ACTION ITEM: To oversee the creation of a town common area within the Town Center zoning district.  
BOARD: Board of Selectmen and Planning Board  
SCHEDULE: September 2006

ACTION ITEM: To create a minimum of one (1) mile of hiking trails.  
BOARD: Conservation Commission  
SCHEDULE: November 2006

## ANNUAL/ONGOING PROJECTS

ACTION ITEM: Schedule annual hazardous waste days

BOARD: Selectmen and DPW

ACTION ITEM: To lobby for adequate budgets for enforcement of regulations.

BOARD: All

ACTION ITEM: To use the Non-criminal Dispositions By-law to issue fines to zoning violators.

BOARD: Building Inspector

ACTION ITEM: Develop a stewardship program for town municipal open space and conservation land

BOARD: Conservation Commission

ACTION ITEM: Review all requests for taking land out of Chapter 61 & 61A and make recommendations

BOARD: Conservation Commission, Planning Board and Selectmen

ACTION ITEM: Set aside land in subdivisions and site plans for open space

BOARD: Planning Board

ACTION ITEM: Encourage the use of the Open Space Commercial Development Bylaw to preserve open space in commercial developments

BOARD: Planning Board

ACTION ITEM: Explore all available funding sources for acquisition of open space

BOARD: Conservation Commission

ACTION ITEM: Include line item in annual budget for conservation land maintenance

BOARD: Conservation Commission and DPW

ACTION ITEM: Coordinate reviews of projects having wetland impacts

BOARD: Conservation Commission and Board of Appeals

ACTION ITEM: To continue the water quality monitoring program.

BOARD: Planning Board and Board of Health

ACTION ITEM: To identify and eliminate sources of pollution.

BOARD: Planning Board, Board of Health, and Water Resources

ACTION ITEM: To assess existing zoning and land use controls to ensure natural resource protection, aquifer protection, and open space preservation.

BOARD: Planning Board

ACTION ITEM: Prepare a brochure on proper care and maintenance of septic systems and distribute to residents of Boxborough.

BOARD: Board of Health and Conservation Commission

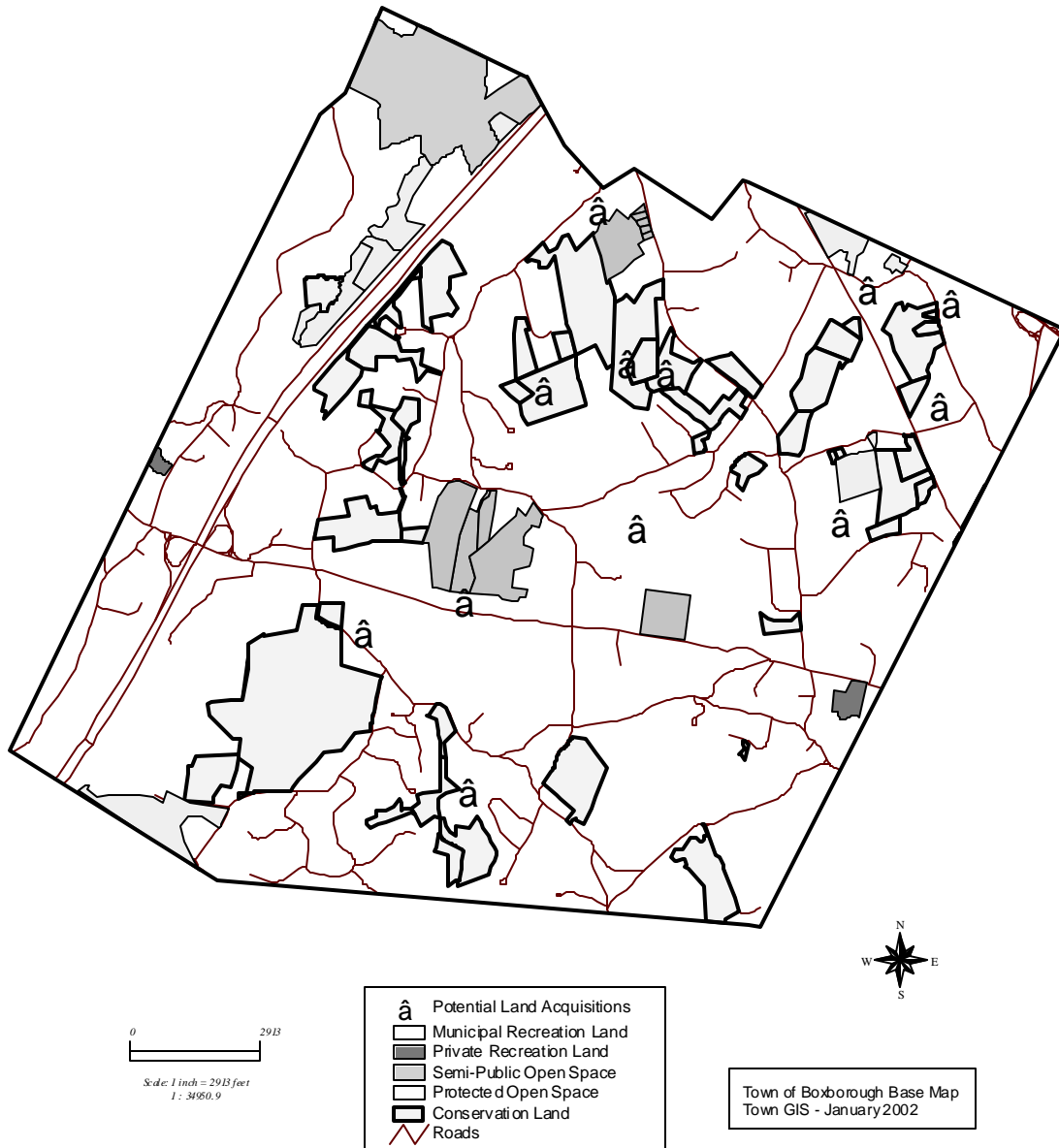
ACTION ITEM: To enforce permit conditions.

BOARD: Building Inspector, Conservation Commission, Zoning Board of Appeals, and Planning Board

Implementation of the Open Space and Recreation Plan is dependent upon a commitment from town residents to support funding for land acquisition and continued maintenance of existing lands. Because Boxborough relies heavily on volunteers serving on the various town boards, it is important that residents continue to actively participate in local government.

# MAP 9 Five Year Action Plan

Map 9  
Five-Year Action Plan  
Potential Land Acquisitions



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## **SECTION 10 - PUBLIC COMMENTS**

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## SECTION 11 - REFERENCES

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## **APPENDICES**

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## APPENDIX A: HISTORIC HOUSE SITES

HSite	Str_	Street	Owner	Par_id
1		89 HILL RD		037/008.5-0161-0000.0
2		45 HILL RD	ASHTON	037/002.3-0113-0001.0
3		723 MASS AV	UNITED CHURCH OF CHRIST	037/006.3-0146-0000.0
4		30 MIDDLE RD	UNITED CHURCH OF CHRIST	037/006.3-0144-0000.0
5		723 MASS AV	UNITED CHURCH OF CHRIST	037/006.3-0145-0000.0
6		25 STOW RD	BOXBOROUGH TOWN CENTER LLC	037/006.4-0129-0000.0
7		72 STOW RD	FRANCIS G LYONS FAMILY TRUST	037/006.4-0166-0001.0
8		411 WHITCOMB RD	DIODATI	037/002.1-0165-0000.0
9		235 SUMMER RD	JOULE POWER INC	037/010.4-0292-0000.0
10		0 HILL RD	TOWN OF BOXBOROUGH	037/003.3-0208-0000.0
11		0 MIDDLE RD	TOWN OF BOXBOROUGH	037/003.3-0122-0000.0
12		0 BURROUGHS RD	TOWN OF BOXBOROUGH	037/006.4-0211-0000.0
13		484 MIDDLE RD	TOWN OF BOXBOROUGH	037/007.3-0125-0000.0
14		1098 HILL RD	HILBERG	037/008.3-0171-0001.0
15		1093 LIBERTY SQ RD	BLANKENSHIP	037/008.6-0134-0001.0
16		1113 HILL RD	FIREHOUSE REALTY TRUST	037/008.5-0164-0000.0
17		160 DAVIDSON RD	HARBISON	037/008.6-0148-0000.B
18		69 DEPOT RD	KRUSEN	037/012.6-0242-0000.0
19		61 DAVIDSON RD	BOYCE	037/008.6-0223-0000.0
20		1008 HILL RD	CTR REALTY TRUST	037/004.3-0188-0000.0
21		86 DAVIDSON RD	MOSHER JOHN D &	037/008.6-0151-0000.0
22		989 HILL RD	SINGER ISADORE M & ROSEMARIE K	037/007.5-0158-0004.0
23		1018 LIBERTY SQ RD	FORTE	037/008.5-0181-0000.0
24		8 DAVIDSON RD	SMITH	037/008.6-0163-0002.0
25		447 LITTLEFIELD RD	EHRENFRIED	037/012.6-0246-0000.0
26		234 DEPOT RD	ZONFRELLI	037/012.6-0181-0000.0
27		986 LIBERTY SQ RD	ZAMPIELLO	037/008.5-0183-0000.0
28		828 HILL RD	ROBINSON	037/003.3-0192-0000.0
29		241 DEPOT RD	CURTIS	037/008.6-0165-0000.0
30		394 LITTLEFIELD RD	FRASER	037/012.6-0193-0000.0
31		908 LIBERTY SQ RD	HOWE	037/008.5-0186-0000.0
32		796 HILL RD	AVERY	037/003.3-0193-0000.0

33	827 HILL RD	ECKROTH	037/003.5-0154-0000.0
34	799 HILL RD	K & J REALTY COMPANY	037/003.5-0153-0000.0
35	239 LITTLEFIELD RD	HAWES	037/012.6-0248-0002.0
36	0 PICNIC ST	ROBINSON	037/003.5-0149-0000.0
37	232 LITTLEFIELD RD	PAINE	037/012.6-0197-0000.0
38	604 HILL RD	DELANO	037/003.3-0163-0001.0
39	657 HILL RD	GOLDEN	037/003.5-0106-0000.0
40	613 HILL RD	WEAVER	037/003.5-0105-0000.0
41	555 LIBERTY SQ RD	VORCE	037/011.6-0218-0002.0
42	630 LIBERTY SQ RD	FRANZ	037/008.5-0194-0000.0
43	36 SARGENT RD	GAEBEL	037/012.6-0356-0000.0
44	576 LIBERTY SQ RD	BARNETT	037/011.5-0254-0000.0
45	120 BARTEAU LN	SACCONE	037/003.3-0213-0008.0
46	81 CUNNINGHAM RD	NEW BLUE HILLS SAUGUS RLTY TR	037/002.3-0105-0000.0
47	448 LIBERTY SQ RD	STEWART	037/011.5-0260-0002.0
48	593 MIDDLE RD	BEHRSTOCK	037/003.5-0101-0000.0
49	438 HILL RD	SUMMERS	037/003.3-0209-0000.0
50	429 LIBERTY SQ RD	HIRSHBERG	037/011.6-0341-0000.0
51	317 MIDDLE RD	NEVILLE	037/007.5-0228-0000.0
52	409 LIBERTY SQ RD	COBLEIGH	037/011.6-0340-0001.0
53	429 HILL RD	S R HOOD TRUST NO 1	037/003.3-0121-0000.0
54	435 MIDDLE RD	ELENBAAS	037/007.5-0233-0000.0
55	20 CODMAN HILL RD	DEE REALTY TRUST	037/002.1-0108-0000.0
56	8 HILL RD	ROBINSON	037/002.3-0101-0000.0
57	1526 MASS AV	PARSONS	037/002.2-0131-0000.0
58	89 MIDDLE RD	VINAL	037/006.5-0334-0000.0
59	71 MIDDLE RD	DECKER	037/006.5-0333-0001.0
60	29 MIDDLE RD	BOXBOROUGH	037/006.5-0330-0000.0
61	709 MASS AV	UNITED CHURCH OF CHRIST	037/006.5-0329-0000.0
62	3 OLD HARVARD RD	CHERNAK	037/006.2-0137-0000.0
63	23 SUMMER RD	VORCE	037/011.4-0268-0000.0
64	137 PINE HILL RD	STEWART	037/010.4-0280-0000.0
65	179 BURROUGHS RD	TOLLIVER	037/010.4-0194-0000.0
66	367 BURROUGHS RD	METHENY	037/010.4-0205-0000.0

67	493 CODMAN HILL RD	ACORN TREE AND LANDSCAPING SER	037/001.1-0102-0000.0
68	118 PINE HILL RD	TOUPS	037/010.4-0279-0000.0
69	97 PINE HILL RD	SWACKHAMER	037/010.4-0275-0001.0
70	308 BURROUGHS RD	WILFERT	037/010.4-0215-0000.0
71	8 WHITNEY LA	CALLAHAN	037/006.2-0174-0002.0
72	91 PINE HILL RD	BARR	037/010.4-0274-0000.0
73	326 BURROUGHS RD	REINERT	037/010.4-0214-0000.0
74	150 SUMMER RD	MAHONEY	037/010.4-0283-0000.0
75	370 BURROUGHS RD	SHEEHAN	037/010.4-0213-0000.0
76	205 FLAGG HILL RD	BJORKLUND	037/010.4-0238-0001.0
77	432 STOW RD	BUTLER	037/006.4-0245-0001.0
78	526 STOW RD	WEST	037/009.4-0242-0000.0
79	579 STOW RD	RUDENKO	037/009.2-0197-0000.0
80	533 HILL RD	BACHARACH	037/003.5-0103-0000.0
81	462 HILL RD	COOLIDGE	037/003.3-0207-0000.0
82	214 HILL RD	SCURFIELD	037/002.3-0224-0000.0
83	187 HILL RD	WETHERBEE FARMS REALTY COMPA	037/002.3-0116-0000.0
84	1001 DEPOT RD	PARENT	037/007.5-0225-0000.0
85	284 OLD HARVARD RD	AMORY	037/005.2-0168-0000.0
86	1190 LIBERTY SQ RD	COUTTS	037/008.5-0170-0000.0
87	15 CODMAN HILL RD	FOSTER	037/002.1-0107-0001.A
88	875 DEPOT RD	WILBERT	037/007.5-0223-0002.0

## **APPENDIX B: BIRD INVENTORY BY JENNY MICHAELS**

## APPENDIX C: CHAPTER LAND FY01

<u>parcel-id</u>	<u>use</u>	<u>str#</u>	<u>street</u>	<u>owner</u>	<u>acres</u>
037/007.5-0223-0002.0	16	875	DEPOT RD	WILBERT, MATTHEW M & DEBORAH J	25.79
037/008.3-0183-0001.0	16	1164	HILL RD	TAYLOR, MARION T &	11.71
037/008.6-0132-0001.0	16	1033	LIBERTY SQ RD	PARSONS, WAYNE R	11.39
037/004.1-0178-0000.0	16	260	LITTLETON COUNTY RD	HARVARD SPORTSMENS CLUB, INC	42.00
037/006.2-0180-0000.0	601	94	CHESTER RD	MORAN, PATRICK T & HARRIET M	17.59
037/007.5-0227-0002.0	601	0	DEPOT RD	VELEY, ARDEN &	16.01
037/007.5-0236-0000.0	601	0	DEPOT RD	CAMPBELL, CARLETON E & CLYOLYN N	35.64
037/009.4-0332-0000.B	601	0	FLAGG HILL RD	TREFRY, ARTHUR W & ESTHER H	22.04
037/004.1-0176-0000.0	601	0	HARVARD/LITTLETON	HARVARD SPORTSMENS CLUB, INC	49.54
037/001.2-0114-0000.0	601	0	HAZARD LN	SHERRY, RICHARD D	3.41
037/001.2-0115-0000.0	601	0	HAZARD LN	SHERRY, RICHARD D	12.33
037/001.2-0116-0001.0	601	0	HAZARD LN	SHERRY, RICHARD D	14.16
037/004.1-0179-0000.0	601	0	LITTLETON LINE	HARVARD SPORTSMENS CLUB, INC	3.33
037/006.4-0120-0000.0	601	0	MASS AV	MARCUS FAMILY REALTY TRUST	27.00
037/004.1-0174-0000.0	601	0	OLD LITTLETON RD	HARVARD SPORTSMENS CLUB, INC	4.30
037/001.2-0208-0000.0	601	0	RT 495	SHERRY, RICHARD D	4.00
037/004.1-0180-0000.0	601	0	RT 495	HARVARD SPORTSMENS CLUB, INC	11.91
037/004.1-0182-0000.0	601	0	RT 495	HARVARD SPORTSMENS CLUB, INC	13.96
037/004.1-0184-0000.0	601	0	RT 495	HARVARD SPORTSMENS CLUB, INC	24.57
037/004.1-0185-0000.0	601	0	RT 495	HARVARD SPORTSMENS CLUB, INC	12.00
037/004.3-0169-0000.0	601	0	RT 495	HARVARD SPORTSMENS CLUB, INC	6.90
037/012.6-0199-0000.0	601	0	SARGENT RD	CAMPBELL, CARLETON E & CLYOLYN N	20.52
037/012.6-0206-0000.0	601	0	SARGENT RD	CAMPBELL, CARLETON E & CLYOLYN N	0.83
Total Chapter 61 Land					390.93
037/010.4-0213-0000.0	17	370	BURROUGHS RD	SHEEHAN, SYLVIA L	59.00
037/007.5-0343-0000.0	17	120	COBLEIGH RD	FOLLETT, DAVID R &	12.49
037/012.6-0187-0000.0	17	0	DEPOT RD	KRUSEN, GEORGE C II & BETSEY M	30.00
037/012.6-0242-0000.0	17	69	DEPOT RD	KRUSEN, GEORGE C II & BETSEY M	15.03
037/004.3-0167-0000.0	17	0	HILL RD	RIDGE HILL REALTY COMPANY	46.99
037/002.3-0116-0000.0	17	187	HILL RD	WETHERBEE FARMS REALTY COMPANY	15.87
037/003.3-0163-0001.0	17	604	HILL RD	DELANO, JOHN PHILLIP	26.67
037/003.3-0192-0000.0	17	828	HILL RD	ROBINSON, GEORGE W & BARBARA	8.50
037/010.4-0267-0001.0	17	0	MASS AV	VORCE, RAYMOND M JR	4.08
037/002.3-0156-0000.0	17	1197	MASS AV	CANN REALTY TRUST	16.30
037/007.3-0135-0000.0	17	276	MIDDLE RD	RICHARDSON, CLYDE L & VIRGINIA B	18.57
037/012.6-0354-0005.0	17	142	SARGENT RD	IDYLWILDE FARM INC	15.40
037/011.6-0346-0001.0	17	392	SARGENT RD	DAVIS, JOHN R & ROBIN L HACKING-	7.88
037/010.4-0239-0021.0	17	540	STOW RD	SUTCLIFFE, WILLIAM M & EILEEN C	6.73
037/012.6-0258-0000.0	712	0	LITTLEFIELD RD	NAPOLI, THOMAS F & KATHARINE L S	25.37
037/001.2-0103-0001.0	714	0	ELDRIDGE RD	SPAULDING, ARTHUR J & MARIE	14.76
037/001.2-0103-0002.0	714	0	ELDRIDGE RD	SPAULDING, ARTHUR J & MARIE	2.40
037/012.6-0184-0000.0	717	0	DEPOT RD	KRUSEN, GEORGE C II & BETSEY M	0.50
037/012.6-0247-0000.0	717	0	LITTLEFIELD RD	KRUSEN, GEORGE C II & BETSEY M	19.25
037/011.4-0285-0000.0	717	0	MASS AV	VORCE, RAYMOND M JR	7.60
037/012.6-0208-0000.0	717	0	SARGENT RD	KRUSEN, GEORGE C II & BETSEY M	14.50
037/003.5-0156-0000.0	718	0	HILL RD	RIDGE HILL REALTY COMPANY	5.71
037/008.5-0167-0000.0	718	0	LIBERTY SQ RD	COUTTS, LORNA M	10.89
037/004.1-0187-0000.0	720	0	RT 495	RIDGE HILL REALTY COMPANY	27.02
037/012.6-0183-0000.0	722	0	DEPOT RD	KRUSEN, GEORGE II	7.75

Total Chapter 61A Land				419.26
037/008.3-0176-0000.0	18	1178 HILL RD	HUGEL, FRED & MARGUERITE	12.52
037/011.6-0336-0000.0	18	297 LIBERTY SQ RD	MITCHELL, ANNA S	30.09
037/006.4-0166-0001.0	18	72 STOW RD	FRANCIS G LYONS FAMILY TRUST	11.05
037/009.2-0189-0000.A	803	0 STOW RD	MINUTE MAN AIR FIELD, INC	7.80
037/009.2-0196-0000.0	803	0 STOW RD	MINUTE MAN AIR FIELD, INC	9.78
037/009.2-0206-0000.0	803	0 STOW RD	MINUTE MAN AIR FIELD, INC	15.24
037/005.2-0189-0001.0	803	8 TAMARACK LA	MINUTE MAN AIR FIELD, INC	1.14
037/005.2-0189-0002.0	803	22 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.93
037/005.2-0189-0003.0	803	38 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.93
037/005.2-0189-0004.0	803	54 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.93
037/005.2-0189-0005.0	803	66 TAMARA CK LA	MINUTE MAN AIR FIELD, INC	0.92
037/005.2-0189-0006.0	803	80 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.99
037/005.2-0189-0007.0	803	92 TAMARACK LA	MINUTE MAN AIR FIELD, INC	1.84
037/005.2-0189-0008.0	803	106 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.92
037/009.2-0189-0009.0	803	114 TAMARACK LA	MINUTE MAN AIR FIELD, INC	5.40
037/009.2-0189-0010.0	803	120 TAMARACK LA	MINUTE MAN AIR FIELD, INC	4.60
037/005.2-0189-0011.0	803	126 TAMARACK LA	MINUTE MAN AIR FIELD, INC	1.84
037/005.2-0189-0012.0	803	134 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.92
037/005.2-0189-0013.0	803	150 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.95
037/005.2-0189-0014.0	803	164 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.95
037/005.2-0189-0015.0	803	178 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.95
037/005.2-0189-0016.0	803	192 TAMARACK LA	MINUTE MAN AIR FIELD, INC	0.92
Total Chapter 61B Land				111.61
Total Chapter Land				921.80